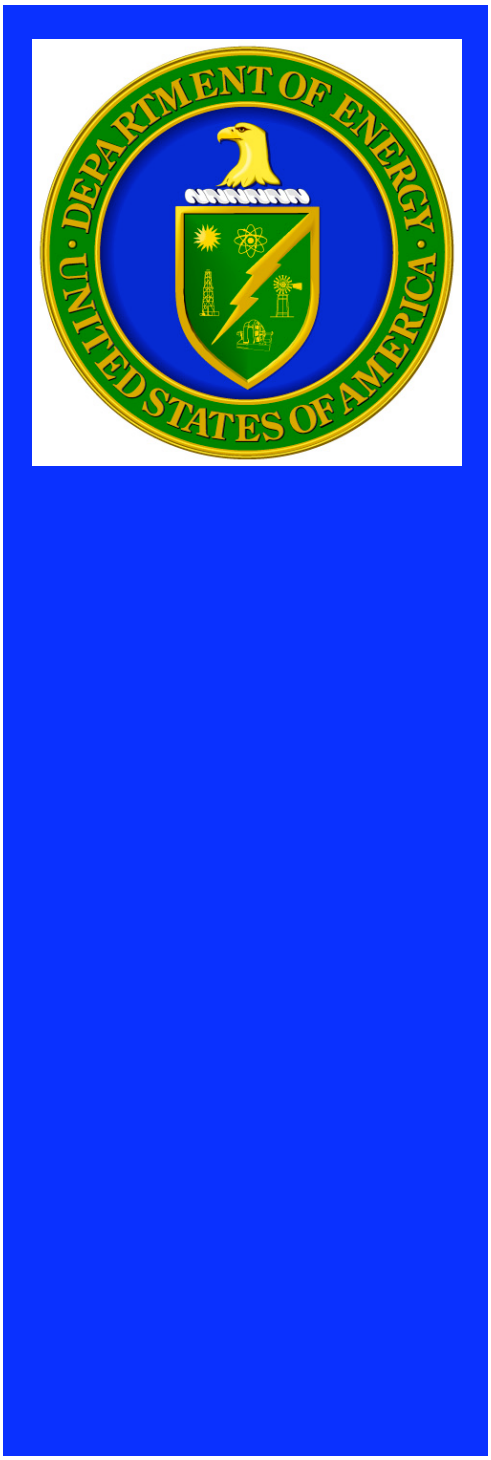

U.S. Department of Energy

Guide to IT Capital Planning and Investment Control (CPIC)

September 2005

Office of the Chief Information Officer

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1.0 PREFACE

This document has been prepared by the U.S. Department of Energy (DOE) Office of the Chief Information Officer (OCIO) to document the Department's Capital Planning and Investment Control (CPIC) process for information technology (IT) and provide guidance Department-wide. Consistent with OMB Circular A-130, the Department's IT CPIC process is an iterative process with inputs coming from across the Department and the outputs feeding into the budget and investment control processes.

Purpose

The IT CPIC Guide's purpose is to:

- Serve as the IT management guide for the execution of IT CPIC;
- Demonstrate how the integrated and iterative Departmental CPIC process aligns and operates with other Departmental processes;
- Clarify IT management nuances within the Department's other capital asset management processes; and
- Document the Department's IT CPIC process and be provided to OMB consistent with the budget process.

This Guide will be updated annually to include any new internal and/or external process changes and to reflect CPIC maturity.

Scope

The IT CPIC Guide's scope addresses all major IT investments.

2.0 INTRODUCTION

2.1 Capital Planning and Investment Control Overview

As defined by OMB Circular A-11, "Capital planning and investment control (CPIC) is a systematic approach to managing the risks and returns of IT investments for a given mission. It is an integrated management process which provides for the continuous selection, control, and life-cycle management and evaluation of IT investments and is focused on achieving a desired business outcome."

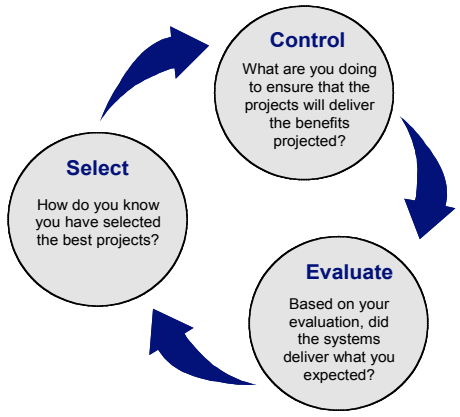
CPIC consists of the following three phases:

Select The process the Department uses to determine priorities and make decisions about which initiatives (new and ongoing) they will fund and include in the IT portfolio.

Control An ongoing management process designed to monitor the progress of initiatives against projected cost, schedule, performance, and expected missio benefits. The Control Phase helps to ensure each investment is properly managed.

Evaluate Once initiatives are fully implemented, actual versus expected results are evaluated to (1) assess the initiative's impact on strategic performance, (2) identify any changes or modifications to the initiative that may be needed, and (3) revise the investment management processes based on lessons learned.

Figure 1– Phases of the CPIC Process



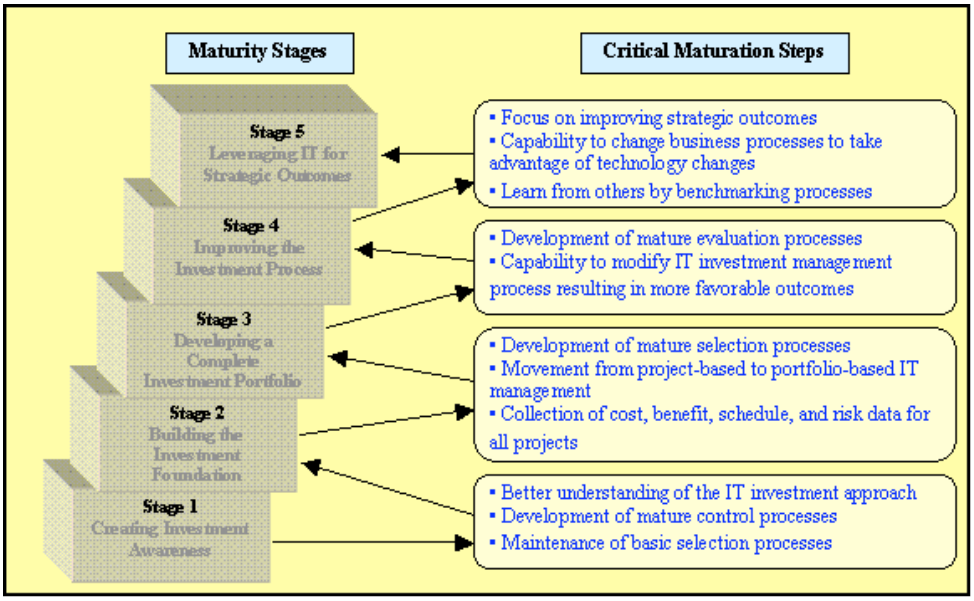
Beyond the obvious business value of an effective CPIC process, there are various legislative and regulatory drivers for implementing CPIC. Many legislative reforms emphasize the need for federal agencies to significantly improve how they plan, select, fund, control, and evaluate IT initiatives. The Clinger-Cohen Act requires federal agencies to focus on the results achieved through IT initiatives while concurrently streamlining their IT acquisition process. It also mandates that agency heads implement a process for maximizing the value of IT initiatives, assess and manage the risks of IT acquisitions, and quantitatively benchmark the performance of IT activities against comparable processes and organizations in the public or private sector.

To provide agencies with specific guidance on implementing the Clinger-Cohen Act, the Office of Management and Budget (OMB) regularly revises Circular A-130, *Management of Federal Information Resources*. The revisions apply to the sections of A-130 concerning information systems and IT management. It requires agencies to follow the provisions of the Clinger-Cohen Act and OMB Circular A-11, which involve the acquisition, use, and disposal of IT as a capital asset.

The General Accountability Office (GAO), also in response to the Clinger-Cohen Act, developed the Information Technology Investment Management Process Maturity Framework (ITIM/PMF). The purpose of the framework is to identify critical processes for successful IT investment and

management and organize these processes into a framework of increasingly mature levels. GAO's ITIM/PMF provides a comprehensive model for evaluating and assessing an organization's CPIC process and helps identify specific areas for improvement. An overview of the framework is provided in Figure 2 below.

Figure 2– GAO ITIM Stages of Maturity



A mature CPIC process yields numerous benefits to investment managers, key stakeholders, and program and departmental executives. Benefits include:

- Increased capability to achieve mission and business objectives
- Clear alignment of proposed initiatives with IT strategic goals and objectives, as specified in an IRM Strategic Plan
- Support and integration with EA efforts
- Forum for measuring performance and net benefits for dollars invested
- Framework to balance potential benefits against costs and risk
- Protocol for setting IT priorities and making appropriate IT resource shifts based on priorities

2.2 Department of Energy CPIC Process Overview

The DOE CPIC process encompasses the submission of all major information technology (IT) investment information to the OCIO for evaluation and resultant recommendation to Corporate Review Budget Board for inclusion, or continued inclusion, in the Department IT investment portfolio and budget submissions.

The Department is required to submit Capital Asset Plans (Exhibit 300s) for all major IT investments. OMB and the Department have defined major IT investments, including large infrastructure investments, as those that meet any of the following criteria:[1]

- Total Project Cost (TPC) of $5 million or more [i.e., cumulative D/M/E funding across all fiscal years (all past, current, and all future) of the project];
- Any investment with cumulative Steady State or mixed lifecycle funding of $5 million or more across the Prior Year (PY), the Current Year (CY), and the Budget Year (BY);
- A financial system with an estimated investment cost of $500 thousand or more in one year;
- An interagency E-Government initiative or line of business where DOE is the lead agency and existing major IT investments targeted for migration to an E-Government line of business in FY 2006 or 2007;
- OMB directed portfolio IT investments (e.g., Infrastructure and Enterprise Architecture);
- Requires special management attention because of its importance to the agency mission;
- Has high development, operating, or maintenance costs, high risk or high return;
- Plays a significant role in the administration of agency programs, finances, property, or other resources;
- A grants management IT investment, regardless of dollar value.

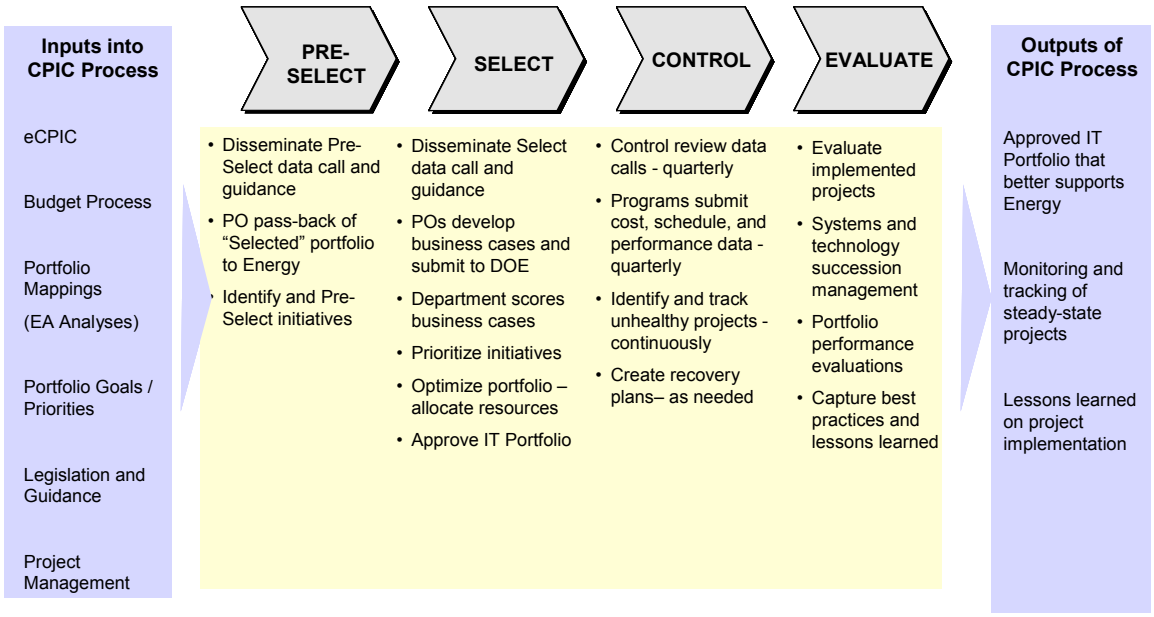
The four categories of e-Government initiatives are:

- Government-to-Citizens (G2C): Initiatives to build easy to find, easy to use, one-stop points-of-service that make it easy for citizens to access high-quality government services.
- Government-to-Business (G2B): Initiatives that reduce government's burden on businesses by eliminating redundant collection of data and better leveraging E-business technologies for communication.
- Government-to-Government (G2G): Initiatives that make it easier for states and localities to meet reporting requirements and participate as full partners with the federal government in citizen services, while enabling better performance measurement, especially for grants.
- Internal Efficiency and Effectiveness (IEE): Initiatives that make better use of modern technology to reduce costs and improve quality of federal government agency administration, by using industry best practices in areas such as supply-chain management, financial management and knowledge management.

[1] Department of Energy, *Information Technology (IT) Reporting Format and Requirements for FY 2007 Budget Submission,* April 2005, (Based on OMB Circular A-11, Sections 53 and 300, "Information Technology and E-Government")

The evolving CPIC process at the Department of Energy involves Pre-select activities and the standard Select, Control, and Evaluate phases, as shown in Figure 3.

Figure 3– DOE CPIC Process



Currently pre-select activities occur in the program and staff offices in that the offices determine which initiatives will be considered for inclusion in the Department's portfolio before submission to the OCIO. The DOE Select Phase is closely integrated with the budget process and is detailed in section 2.4 of this document. Control Phase processes have been implemented within the Department and occur on a quarterly basis. The Evaluate Phase is beginning to mature at the program office and department levels. The Department finalized guidance for conducting Post Implementation Reviews as part of the Evaluate phase in June 2005.

Numerous inputs feed into the DOE CPIC process, including legislative guidance, Enterprise Architecture analyses, the Department's investment management methodology, as well as portfolio goals. IT initiative information is maintained in the Department's Electronic Capital Planning and Investment Control tool, e-CPIC.

The outputs of the DOE CPIC process are an approved IT portfolio that best supports the Department, ongoing monitoring and evaluation of initiatives, and lessons learned that can be fed back into the management of investments and the CPIC process.

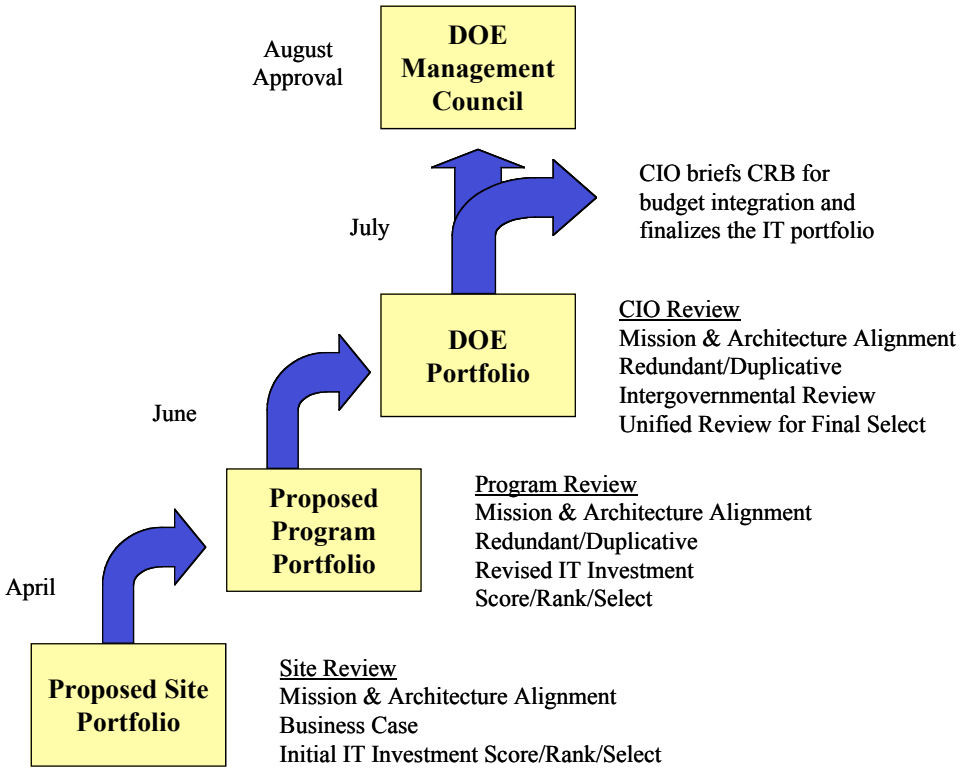
DOE's Select, Control, and Evaluate phases are detailed in sections 3.0 – 5.0 of this document. A summary of the phases is provided below:

Select Phase

The Select Phase is focused on the development and selection of an IT portfolio that supports the DOE Enterprise Architecture and meets the mission goals of the Department. Figure 4 depicts the current process for the development and selection of the annual IT portfolio. Program and staff offices are responsible for evaluating target performance outcomes and

reviewing all proposed investments to ensure that the IT portfolio is consistent with the program budget submission. IT investments are selected for the portfolio based on defined selection criteria consistent with the requirements of OMB Circulars A-11 and A-130, and DOE Order 413.3. Proposed IT portfolios are then forwarded to Headquarters with budget request data and incorporated into the Department-wide IT portfolio. Pursuant to an internal review and scoring for each major IT investment business case by the OCIO, a portfolio analysis is performed as part of the Corporate Review Budget (CRB) process. The CRB Board makes budget decisions and the final IT portfolio is presented to the DOE Management Council for final approval of the Department's IT portfolio.

Figure 4 - Annual IT Portfolio Selection Process



Control Phase

The Control Phase is utilized to assess the performance of all major IT investments within the Department of Energy. This process enables the effective management of the Department of Energy's IT investments. The Control Review sets in place a structured process to provide senior management with accurate information that will allow them to make timely decisions. All major IT investments are subject to OCIO Quarterly Control Reviews. Quarterly control reviews include a review of EVMS data where applicable and investment status data for investments not subject to EVMS requirements. IT investments not performing according to expectations (within 90% of cost, schedule, and performance goals) are subject to additional detailed reviews, managerial corrective actions, or termination. In addition, all investments must report on project management certification requirements, as required by the new Federal CIO Council guidance, and the certification and accreditation status of the investment. This review assesses

the performance of major IT investments ensuring compliance with both external and internal regulations and guidance.

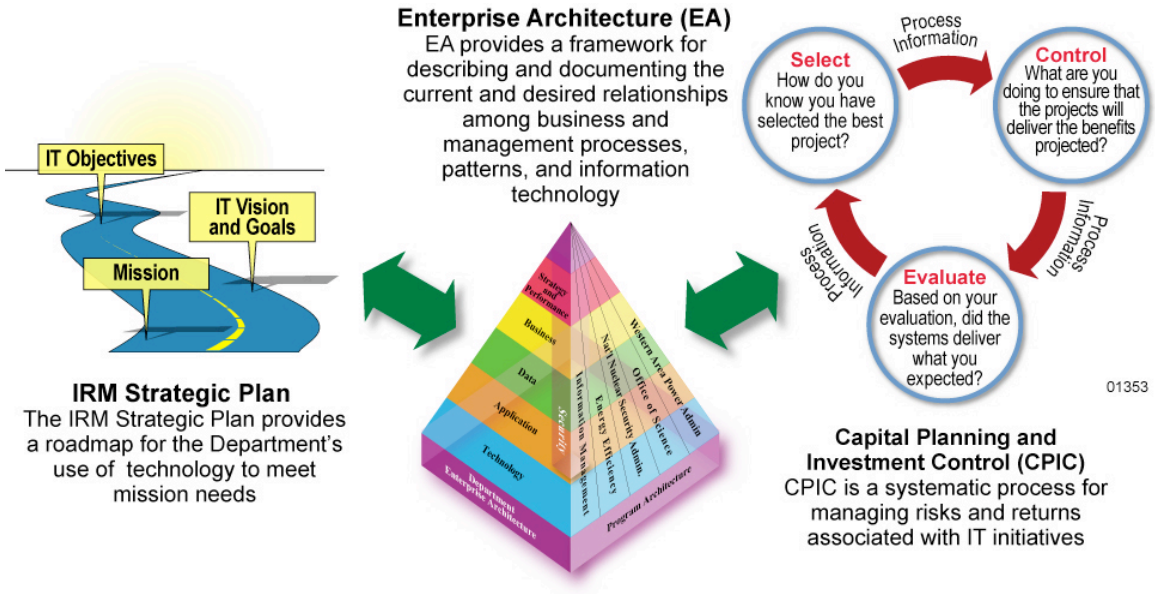
Evaluate Phase

A post-implementation review is performed on IT systems six to eighteen months after they are fully deployed. The purpose of this review is to determine if the IT investment achieved the expected benefits projected in the business case. This review is important not only to determine the future viability of the IT investment, but also to assist IT managers in improving IT proposal business case requirements to better inform future IT selection decision-making.

2.3 DOE CPIC Integration with Other IT Investment Management Processes

In addition to CPIC, Information Resources Management (IRM) strategic planning and DOE's Enterprise Architecture form an integrated Strategic Business Management (SBM) framework aimed at effectively managing the Department's portfolio. The Figure below describes how the three processes integrate at a high level.

Figure 5 – Strategic Business Management Framework



The IRM Strategic Plan provides DOE a description of how IRM activities help accomplish agency missions, and ensure that IRM decisions are integrated with organizational planning, budget, and program decisions. This enables the CIO to articulate a shared vision and corporate perspective among the Department's information activities further allowing the CIO to champion Departmental initiatives that effectively manage information and provide for value added corporate systems.

As a companion to IRM strategic planning, DOE developed an Enterprise Architecture (EA) framework that leverages both strategic and operational IRM planning activities to identify target opportunities. Through utilizing its EA, DOE can identify and analyze "points of entry" (e.g.,

number of investments supporting a LOB/Sub function) that can result in recommendations for long-term savings and increased efficiency. The EA is also aligned with the annual budget cycle and provides updates that further define the Baseline and Target architectures based on decisions made in the IT Capital Planning and Investment Control process.

EA Integration with CPIC Processes

DOE is working to incorporate a more robust selection process that ensures strategic integration of EA with CPIC, standardization of investment assessment/prioritization and more centralized portfolio management analyses and support. As part of the Select process, DOE is working to expand the current evaluation criteria to more fully incorporate EA as a significant, decision-making component of this process.

In the past, the DOE investment evaluation has primarily focused on the business value assessment. Additionally, the degree to which an investment support's the Department's goals and objectives has also been assessed. The development and implementation of a more integrated approach is the focus of the SBM framework. This involves the expansion of the strategic component to ensure a straight "line of sight" for investment contribution to the Department's overall goals and objectives, as well as, a more robust EA component through the implementation of the vulnerabilities assessment.

The integration of EA with CPIC processes through the implementation of the SBM framework will yield:

- Rapid identification of appropriate IT investment goals
- Access to integrated strategic, budget and IT information that will provide a better "line of sight" and approach for decisions that affect the direction of the Department
- Development of a more standardized system of prioritization to support the decision-making process
- Appropriate allocation of resources to the best portfolio of investments ensuring the achievement of those goals
- Enabling project initiators to search for duplicative technology, which will eliminate duplicative investments in resources and funding
- Leverage existing scorecards to monitoring the progress and relevancy of capital investments over time

Program and Project Management for the Acquisition of Capital Assets Integration

The Department is currently aligning the IT CPIC process and DOE Order 413.3[2], which governs acquisition and project management direction for all capital assets. This alignment will combine budget (CPIC), acquisition (413), asset development (413), and life cycle management of IT capital assets (CPIC); thereby creating a unified process that ensures assets are delivered on schedule, within budget and fully capable of meeting mission performance.

The integration between the two capital asset processes will reduce reporting burdens, streamline requirements, and provide clear roles and responsibilities. The first two integration gains provide project managers reduced work processes that can achieve modest economies of scale through reduced reporting time. For instance, the integration will reduce reporting

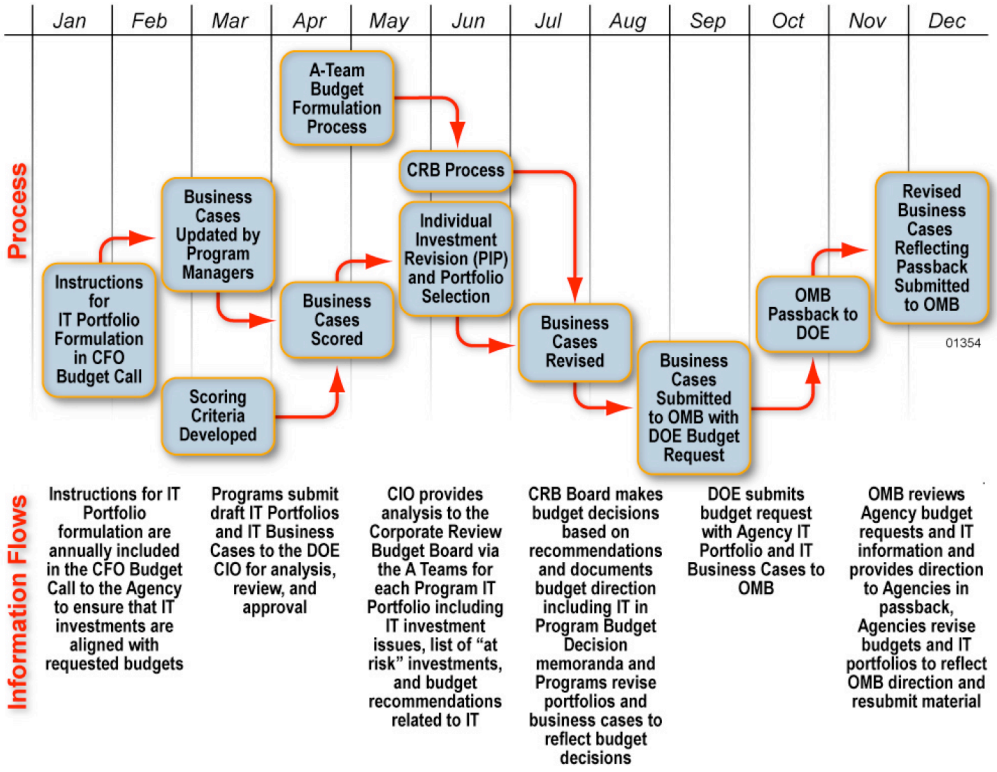
[2] DOE Order 413.3, Program and Project Management for the Acquisition of Capital Assets. 10-13-2000. http://www.directives.doe.gov/cgi-bin/explhcgi?qry2057987218;doe-125

burdens through having IT projects report EVMS and project status information into one tool, the Project Assessment and Reporting System (PARS), once a month versus two separate EVMS reporting tools and requirements. The integration further streamlines capital asset requirements for topic areas such as risk, alternatives analysis, baseline validations, EVMS, mission need statements, and more. Lastly, the integration clarifies and reduces redundant roles and responsibilities for project managers, the OCIO, Office of Engineering and Construction Management (OECM), senior management, integrated project teams and others.

2.4 DOE CPIC Integration with DOE Budget Process

CPIC's iterative processes are integrated with DOE's annual budget process. Figure 6 below depicts the two processes and how they operate together.

Figure 6 –DOE Budget Process and CPIC Integration



The process flow also demonstrates how the CIO remains an active participant throughout the annual budget process in establishing investment priorities for agency information resources. Beginning in January, through the DOE Budget Call, the CIO provides instructions for IT portfolio formulation to the program and staff offices. Based on this instruction the program and staff elements submit their business cases to the OCIO for compliance analysis review, and approval. The analysis, budget recommendations, and an investment "at-risk" list is then provided to the Department's CRB via the A-Team for inclusion in the Department's budget. The CRB makes budget decisions as documented in Program Budget Decision Memoranda (PBD). It is also through the CRB where the CIO directly advises the Deputy Secretary on budgetary implications of information resource decisions. Based on those decisions, the program and staff offices revise their portfolios and respective business cases. The final budget

requests are submitted to OMB for consideration. Toward calendar year end, OMB reviews the budget requests and provides direction in pass back. The OCIO participates in pass back through helping program and staff elements revise their business cases based on OMB direction. Budgets and portfolios are then updated to reflect this direction.

2.5 CPIC Roles and Responsibilities

Listed below are the IT investment roles and responsibilities of those currently involved in the Department of Energy's CPIC Process.

IT Project/Program Managers- IT Project/Program Managers are responsible for the oversight and execution of IT investments. They will be the initiators of the investments and responsible for overseeing the activities of the development and support staff (internal or external service providers).

IT Project/Program Managers
• Manage the initiative throughout its life cycle.
• Ensure the use of the SDLC project management methodology.
• Ensure that IT initiatives align with the Department's enterprise architectures.
• Oversee the initiative's progress, including cost, schedule, and performance.
• Report on the initiative's progress at each life-cycle milestone.
• Develop required SDLC documentation and submit accordingly.
• Participate in quarterly control reviews as required.
• Prepare progress/status reports at request.
• Document lessons learned once projects are closed out.
• Participate in post-implementation reviews.

OCIO IT Planning Division - The OCIO IT Planning Division of the Office of the Associate CIO for IT Reform consists of an interdisciplinary team (e.g., Financial Analysts, Technical Analysts, and Business Functional Analysts) formed to support day-to-day IT planning and management operations under the purview of the Chief Information Officer. The IT Planning Division provides CPIC related guidance and support to program and staff offices and the Department's Corporate Review Budget Board.

OCIO IT Planning Division
• Obtain and review status reports from project managers on performance measures, cost, and schedule goals
• Meet with project managers to review status, recommending corrective action as warranted
• Actively seek to identify "at risk" investments and act to mitigate risks or correct problem areas, bringing significant issues to the CRB for consideration
• Creation of user guides prior to control reviews and post-implementation reviews
• Develop lessons learned documents following the conclusion of a of a control review of

OCIO IT Planning Division
evaluation • Provide recommendations and support materials on IT investments to A team • Ensure evaluation of completed investments against original requirements, compliance with EA, and security policies and regulations • Receive and review investment requests against pre-determined criteria to determine whether they meet minimum viability and investment characteristic requirements. *(The division reviews investment requests, assesses architectural compliance, redundancies, and opportunities for collaboration. It works with project managers when additional information and clarification is needed).* • Monitor major IT investments for progress against projected cost, schedule, and performance goals. • Prepare recommendations for the continuation, modification, or cancellation of funding for investments, creating IT investment health report. • Oversee the preparation of documents called for in the Department's CPIC Process Guide. • Report to OMB cost, schedule, and performance variances of 10 percent or more incurred by major IT initiatives. • Ensure that IT initiatives address accessibility requirements stipulated by Federal Acquisition Regulations. • Analyze DOE's IT portfolio semi-annually and report results to CIO. • Participate in the post-implementation review of initiatives. • Review evaluations of completed investments to identify lessons learned. • Vet lessons learned to the CPIC user community to ensure that all lessons learned have been captured and addressed.

A Team – The A team reviews and makes recommendations concerning budget decisions to the CRB. An IT representative serves on the A team to ensure that IT issues are adequately addressed.

A Team
• Provide analysis and recommendations to the Corporate Review Budget Board on IT investments, as well as other budgetary items.

Corporate Review Budget Board - The Corporate Review Budget Board is responsible for determining the Department's budget submission. They review all capital assets for inclusion in the budget, including IT investments. The CIO and CFO serve on the board, along with Secretaries, Deputy Secretaries, and Under Secretaries, and Under Secretaries from each of the major organizational elements.

Corporate Review Budget Board
• Review program submissions and analysis from functional areas. • Make budget decisions based on recommendations. • Document budget direction in Program Budget Decision memoranda. • Seek input on IT investments from A-Team, CIO and the CFO.

DOE Management Council - The DOE Management Council, a board of senior DOE executives, reviews and approves the proposed Department IT portfolio presented by the CIO.

Management Council
• Reviews and approves departmental IT portfolio.

3.0 SELECT PHASE

3.1 Overview of Select Phase

The Select phase of the IT investment management process determines priorities and makes decisions about which projects will be funded during the year. The goal of the select phase is to ensure that the Department's IT investment portfolio is comprised of the appropriate range of investments that will best support its mission and strategic goals.

The Department has an IT portfolio whose composition changes as investments are modified, added to, or deleted from the portfolio. An analysis of the existing portfolio of IT investments, commonly done as part of a system's or application's disposition process, helps to ensure that senior managers are informed of current costs, benefits, and risks associated with the existing portfolio.

The primary select process occurs annually when the OCIO internally reviews, evaluates, and selects the major IT investments to be included in the portfolio. This process directly contributes to the Department's budget request and submission process and results in the formulation of the IT portfolio for the upcoming fiscal year (FY +1 year) and a projection for the following fiscal year (FY+2 year).

The select process, on a smaller scale, also occurs in conjunction with the IT portfolio control process. The control process accommodates emergent requirements that become known outside of the annual select process timeframe and provides the Department an opportunity to adjust the portfolio in response to changing business, program, and investment conditions.

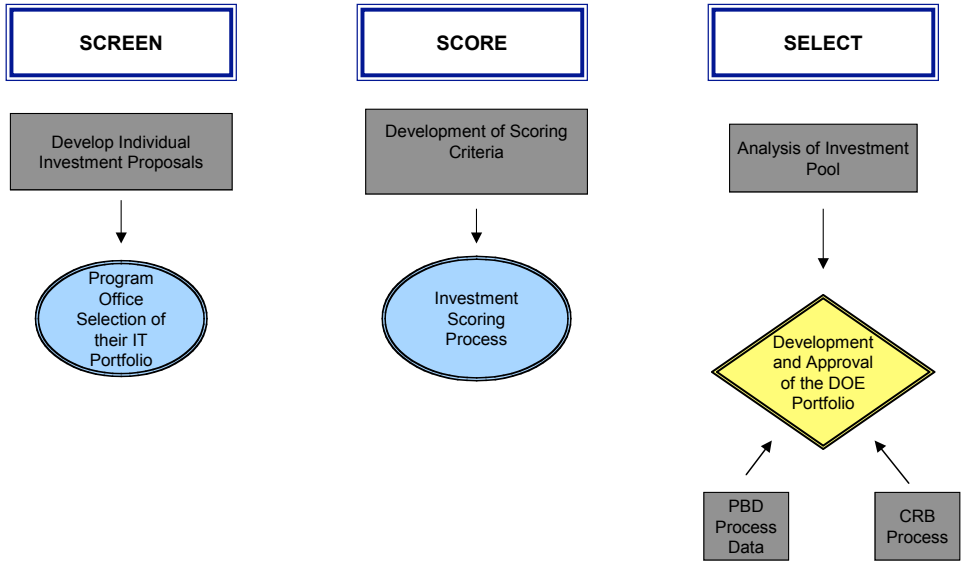
In the information that Program Offices submit to the OCIO, each IT initiative must document the business need for the investment. For each investment the Program Manager must provide:

- A description of the initiative, the benefits to DOE if funding is provided, and the funding requested for development, equipment and maintenance for the entire life cycle of the investment;
- How the investment supports the President's Management Agenda, Secretarial priorities, Congressional mandates, and the Department's strategic goals and objectives;
- How the investment resolves GAO/Inspector General (IG) findings and material weaknesses;
- An alternatives analysis; CBA and budget estimate, including risk-adjusted ROI and net present value (NPV) calculations;
- Initial project plan with estimated costs listed for each work breakdown structure (WBS);
- Performance measures;
- How risks will be managed and security and privacy controls implemented; and
- How the investment conforms to the EA and other related information.

The select process is supported and implemented through the Department's IT governance program and requires the participation and collaboration of all IT Project/Program managers with the program and staff Offices, the Office of the Chief Information Officer (OCIO), the Office of the Chief Financial Officer (CFO), and executive-level decision making bodies. Within the DOE the Select Process is closely tied to the budget process and therefore the OCIO and CFO are an integral part of the Select Process.

There are three parts to the select process: screen, score, and select (See figure 8). These are described in the paragraphs below.

Figure 8 - DOE Select Process



3.2 IT Investment Screening

A starting point for the Select phase is the screening process, in which projects being submitted for funding are compared against a uniform set of screening criteria and thresholds in order to determine whether the projects meet minimal requirements and to identify at what organizational level the projects should be reviewed. The costs, benefits, and risks of all IT projects--proposed, under development, operational, etc.--are then assessed and the projects are compared against each other and ranked or prioritized.

Program Office IT project/program managers screen major IT initiatives before submitting business cases (or updated business cases for ongoing initiatives) to the OCIO for scoring and selection into the Department's IT investment portfolio. Major IT investments are required to submit complete Exhibit 300s. The documentation will be reviewed and scored for all major IT investments as part of the Department's Select process.

The proposed program-wide IT portfolio is reviewed and approved by a board of senior program managers and submitted to the Departmental CIO for review and integration into the DOE IT portfolio. Site IT program managers review individual IT investment business cases and select investments for a proposed site portfolio to ensure that missions and goals are effectively and efficiently supported by the proposed portfolio and that the proposal is consistent with the site IT architecture. Individual IT investment business cases are reviewed to ensure that they are compliant with the requirements of OMB Circulars A-11 and A-130 and adequately justify the investment. The proposed site portfolio is sent to the appropriate Headquarters' Program Office for review and inclusion in a program-wide portfolio. The program office IT portfolios are merged with staff office IT portfolios to create the Department's proposed IT portfolio.

3.3 IT Investment Scoring

Following proposed investment submission by program offices, the OCIO reviews Exhibit 300 submissions consistent with criteria established and promulgated by OMB. The initial stage of

review is to determine if the investment has gone through the necessary programmatic, financial and procurement review processes, and if the exhibit is complete. Exhibits that fail these criteria are sent back to the programmatic offices for review and correction. As soon as the Exhibit passes the aforementioned criteria, it is reviewed for quality and content in accordance with OMB A-11 criteria applicable to performance goals, program management, alternatives analysis, risk management, acquisition strategy, use of a performance based management system, enterprise architecture, security, life cycle costing, and support for the President's Management Agenda. The criteria used in this scoring process are outlined in Appendix B of this document.

The OCIO reviews, scores, and develops Performance Improvement Plans (PIPs) for each major IT investment business case. The PIPs contained detailed comments for improving each section of the Exhibit 300. The OCIO uses an integrated project team of representatives from the IT Planning Division and the offices responsible for enterprise architecture, e-Government, cyber security, and records management to perform the internal review.

3.4 IT Investment Selection

The final selection of major IT initiatives to be included in the Department's IT Investment Portfolio is based on information gathered and analyzed during the screening and scoring stages of the IT CPIC process. The OCIO analyzes and compares initiatives within and across the available IT investment opportunities. Business cases that receive an overall internal passing score based on the A-11 criteria will be tentatively included in the DOE IT Portfolio pending further analysis and approval. Business cases that fail the structured review are returned with specific, detailed comments to the Program Office for correction. All business cases in the portfolio are then subject to further high-level analysis and review in several areas of special interest to the Department. This review and revision process is repeated until a final business case is accepted by the OCIO as a valid, viable business case.

The analyses take into account the relative operational, technical, financial, and institutional strengths and weaknesses of each initiative. Comparisons between initiatives are made based on expected or experienced return, cost, and risk outcomes. The Department's goal is to maintain an IT investment portfolio with the following factors balanced to ensure that, for any given funding investment, the best return to Department mission and functions is obtained.

As part of the Corporate Review Budget (CRB) process, a portfolio analysis is performed. The OCIO submits this analysis with budget recommendations and a list of "at-risk" investments (including major IT investments scored as unsuccessful by OMB and major and other IT investments identified internally by DOE as concerns) to the CRB Board. The CRB Board is comprised of the Deputy Secretary of Energy, the CFO, the CIO, and the Senior Managers from each of the major organizational elements. Program offices are required to submit proposed budgets including a variety of documents (e.g. Exhibits 300 and 53, budget justification documents, strategic plan/program plan) to the CRB. The CRB reviews program submissions and analysis from functional areas, including OCIO IT analysis, to make budget decisions.

Investments identified as "at-risk" during the CRB process are subject to budgetary action up to and including termination. The budget decisions resulting from the CRB process are documented in Program Budget Decision (PBD) Memoranda which are provided to program offices. PBD Memoranda provide specific direction to program offices on revisions to proposed budgets including IT investments. Based on that direction, the program and staff offices revise their respective budgets, business cases, and IT portfolios. At the conclusion of the CRB process, once the program offices have made all required revisions to the IT business cases and portfolios and the OCIO has reviewed the final submission, the draft consolidated DOE IT

Portfolio is presented by the CIO to the DOE Management Council for final approval. The final DOE IT Portfolio is submitted to OMB as attachments to the *DOE IT Capital Plan* for budget review in September of each fiscal year in accordance with OMB Circular A-11 guidance.

3.5 Select and eCPIC

All Exhibit 300s are maintained, updated, and submitted using the eCPIC application. This allows the Department to maintain a repository of investment information. OMB only requires major IT investments to submit an Exhibit 300.

4.0 CONTROL PHASE

4.1 Overview of Control Phase

The Control Phase of CPIC begins once investments have been selected, budgeted, and have received funding. The control phase of the Department's IT CPIC process requires monitoring of on-going IT initiatives during the planning, acquisition, deployment and maintenance/operational phases of the IT investment life cycle. The objective of the control phase is to ensure that IT initiatives are conducted in a disciplined, well-managed, and consistent manner through timely oversight, quality control, and executive review. The control phase promotes the delivery of quality products and results and monitors whether initiatives are completed within scope and budget and on time.

The ability to adequately monitor IT initiatives relies heavily on outputs from effective investment execution and management activities. A certified project manager is responsible for each major IT investment project. The OCIO supports the implementation of automated investment cost and schedule control systems in the Program Offices to manage, maintain, and provide shared access to initiative baselines, monitor changing business requirements, and track resource allocations.

The Department has made significant strides in controlling its IT investments. The CIO has issued a departmental mandate requiring that all major DOE IT investments be reviewed on a quarterly basis. Moreover, the Department has provided training to IT project managers on Earned Value Management through the Management, Budget, and Evaluation Office. All DOE project managers have level one project management certification.

The DOE CPIC Control Phase consists of four major steps as detailed below.

Step 1: Define evaluation criteria and develop scoring criteria and supporting forms/templates for Investment Control Reviews

The OCIO IT Planning Division has established control review scoring criteria to assess the performance and health of IT investments. All major IT investments will be reviewed in the areas of Project Management Certification, Cost Variance, Schedule Variance, Performance Goals, Security, and EVM. "Passing" scores have been defined for each performance area. In addition to evaluation and scoring criteria, the IT Planning Division has created IT investment review summary report templates to be completed by Program Offices for individual investments.

Step 2: Establish and Maintain Initiative Cost, Schedule, and Technical Baselines

The project manager has the responsibility for establishing project management and execution plans, procedures, and practices to support initiative monitoring activities. A mandate has been issued that all major DOE IT investments must be monitored. The project manager is also required to report to the OCIO and the IT Council on the status of the initiative's cost, schedule, and technical baselines each quarter. Baselines provide both the framework and sufficient detail to assess the status of the initiative's major milestones, decisions, activities, and work products and deliverables.

The OMB requirements for appropriate project control include the implementation of an EVMS that meets ANSI/EIA Standard 748. Earned value management provides an indication of how

well an investment is meeting the cost and schedule goals defined prior to the outset of the investment. The determination of earned value begins with an estimate of the costs and schedule dates associated with completing investment milestones. Earned value is an assessment of the dollar value of the work actually accomplished based on the original cost estimates to complete the work. The earned value is compared to (1) the planned value, which is comprised of the original cost and schedule estimates, and (2) actual costs to determine schedule and cost variances, respectfully. The two major objectives of employing earned value are to provide:

- An effective internal cost and schedule management tool for use by project managers
- Review bodies with a mechanism for evaluating initiative progress

All IT initiatives must be planned, budgeted, and scheduled in measurable and phased "value-added" increments. Major IT investments with Total Project Costs (TPC) over $20 million are required to use an ANSI Standard 748-compliant EVMS and to report EVMS data through the Project Assessment and Reporting System (PARS) on a monthly basis.

Major IT investments with total investment costs between $5 and $20 million in the development phase have the option of using EVMS or another approved program management system for management of the investment, but must also report project phase status information through PARS monthly. All major investments with total investment costs between $5 and $20 million are subject to OCIO quarterly control reviews. Non-major IT investments with total investment costs below $5 million are reviewed and managed within the program offices, but are subject to Department-level review and reporting at the discretion of the CIO.

Steady state investments will only be required to provide an operational analysis. For investments in the operations/steady state phase, an operational analysis as defined in the *Capital Programming Guide* must be performed to demonstrate how close the investment is to achieving the expected cost, schedule and performance goals for this phase.

Maintenance and steady state investments must be monitored with an Operational Analysis System to track:

- How close actual annual operating and maintenance costs are to the original life-cycle estimates;
- Whether the level or quality of performance /capability meets performance goals; and
- Whether the system continues to meet user needs.

Step 3: Review of Ongoing IT Investments

During the implementation/execution of the investment, the project managers conduct frequent reviews of their initiatives to assess progress against planned cost, schedule, and technical baselines. The primary purpose of these assessments is to ensure that the initiative is on track, and to identify issues or deficiencies that require corrective action. As part of this process, the project manager is responsible for reporting cost and schedule performance for the investment to the Office of the CIO and the IT Council on a quarterly basis.

To help DOE's IT project managers meet this reporting requirement, a Control Review Template has been developed. This template provides project managers with a standardized format for reporting planned milestones as well as actual performance towards those milestones. The

template then calculates the cost and schedule variances for the investments. Additionally, the template goes beyond the tracking and reporting of variance, it also requires project managers to report on the status of the following areas: Project Manager Certification, Performance Goals, Security, and EVMS.

The Office of the CIO receives the completed templates and conducts a preliminary analysis on the data. The templates and the analysis are then provided to the IT Council for their review. The principal objectives of the IT Council's review are as follows:

- Determine whether investments under review continue to support mission and business functions.
- Assess the extent to which investments continue to meet planned cost, schedule, and technical baselines.
- Identify deficiencies and track the completion of corrective actions.
- Reach and document the decision for each investment to "continue-as-is" or be "modified" in order to improve its overall performance.
- Score investments based on their status for the following six criteria: Project Manager Certification, Cost Variance, Schedule Variance, Performance Goals, Security, and EVM.

IT initiatives that are within 10% of the planned cost and schedule baseline, which comply with Project Management and Security guidance/policies, and are continuing to achieve their planned performance goals, are not likely to be subject to a high level of scrutiny. Greater scrutiny will be given to initiatives that lag behind, exceed the budget, do not meet Security and Project Management guidance/policies, or fail to achieve their performance goals. The IT Council reviews the status of each IT initiative, and hears from the Program Office representative who has the opportunity to present a briefing on the current status of the initiative.

Currently, the IT Council has the authority to recommend that investments either "continue-as-is" or the baseline milestones be "modified". The recommendation to "continue-as-is" will be issued whenever an investment is within the - 10% tolerance range for cost and schedule variance percentage and satisfying existing guidance and policies. The recommendation to "modify" denotes two types of actions, the rebaselining of milestones or the implementation of corrective actions to address poor performing aspects of the investment.

In the event an investment continues to perform poorly over multiple review cycles, the IT Council may recommend to the CIO that the investment be referred to the CFO for further review. The CFO is then responsible for taking the necessary action on the investment. These actions may include:

- **Accelerate:** External factors require the initiative to be completed sooner than expected or initiative resources are available that can enable an acceleration of initiative schedule.
- **Decelerate:** The initiative timetable or funding needs to be reduced in order to allow the initiative an opportunity to regain acceptable cost, schedule, and/or performance levels. Or, external factors, such as dependence on another initiative, require extending the investment life cycle.
- **Suspend:** It is not cost-effective to proceed with further development or ongoing activity until problems stemming from resource shortfalls, initiative performance, system

dependencies, or other external issues are resolved. In addition, a realignment of Department priorities among existing IT initiatives may result in the suspension of an initiative.

- **Cancel:** The initiative is no longer required or there is a low probability that it will ever meet acceptable cost, schedule or performance levels.

Step 4: Identify and Prioritize Deficiencies for Corrective Action

The project manager will develop a strategy to address problems or issues related to their investments. For example, the project risk may have increased substantially due to delays in technology that were needed to complete the investment. Thus, investment funding also may need to be increased, which might impact multiple areas, such as staffing, investment management, and other IT investments. The resolution of all issues will be documented and corrective actions tracked. Given approval of the plan, the initiative's Project Manager will coordinate the implementation and execution of the corrective actions. Typical corrective actions for major deficiencies are described below.

- **Eliminate or avoid** the specific deficiency, usually by selecting a corrective action that eliminates the cause. Corrective action to resolve deficiencies depends on the extent of change that would be required to the initiative's overall project plan, considering the cost (in terms of dollars and/or time) to make the change, and the calculated severity of the deficiency. As a general rule, elimination should be pursued when the deficiency cannot be managed, or the deficiency is costly to the initiative.
- **Reduce** the expected cost associated with the deficiency through corrective action. The option is employed when the elimination or avoidance of the deficiency is not likely. Instead, attention is focused on minimizing the consequences of the problem.
- **Accept** that a deficiency will occur and develop contingency plans to be executed should the deficiency occur. Contingency plans are pre-defined action steps to be taken prior to and if an identified deficiency should occur.

4.2 Control Reviews and eCPIC

The Control Review process utilizes the eCPIC application to facilitate the quarterly Control Review process between the OCIO and the Program Offices. The Control Review Template is provided in the form of a Microsoft Excel file and is accessible for Program Office users to download and complete for their major IT investments. Once complete with quarterly information, the Template is then re-submitted using the eCPIC application.

In FY 2006, the process will be modified where the Control Template will be in an electronic form that will be linked to each major IT investment listed in the application. It will also be linked to the Exhibit 300 for each investment. This will allow project milestone data to be transferred between the Template and the Exhibit 300 for each major IT investment. Linking these two forms will allow for improved data consistency between the IT Budget Reporting/Select Phase and the Control Review Phase of the CPIC process will be improved. Additionally, the eCPIC application will enable the form submission process and form storage to be automated.

5.0 EVALUATE PHASE

5.1 Overview of Evaluate Phase

The evaluation phase of the IT CPIC process begins after an IT initiative becomes operational or prior to an initiative being cancelled/shutdown. Program Offices are encouraged to conduct these reviews. As noted in GAO *Assessing Risks and Returns: A Guide for Evaluating Federal Agencies' IT Investment Decision-Making*, "the Evaluation Phase 'closes the loop' of the IT investment management process by comparing actuals against estimates in order to assess the performance and identify areas where decision-making can be improved." The evaluation phase focuses on three primary steps.

- Determining if the IT initiative met performance, cost, and schedule objectives.
- Determining the extent to which the CPIC process improved the outcome of the IT initiative.
- Determining whether or not the operational system is and will remain in alignment with the relevant enterprise architecture.

The Evaluate Phase includes two components, a Post Implementation Review (PIR) on implemented or cancelled investments and an annual analysis of the performance of the Department's CPIC process. These activities are essential to the contributions that IT investments make toward the accomplishment of the Department's strategic goals and objectives, as well as the ongoing improvement and increased maturity of the CPIC process. Once investments are fully implemented or cancelled, actual versus expected results are evaluated to (1) assess the investment's impact on strategic performance, (2) identify modifications that may be needed, and (3) revise the investment management process based on lessons learned.

5.2 Role of the Post-Implementation Review (PIR)

The purpose of a PIR is to track and measure the impact and outcomes of implemented or cancelled IT investments to ensure they meet the program mission. The need to evaluate a system's ability to effectively meet the organization's mission needs, both functionally and economically, does not end at system deployment. Rather, it is a continuous process to ensure that the system still supports both the end users and the mission needs of the organization. A PIR is typically conducted on implemented investments to evaluate the actual results compared to estimates in terms of cost, schedule, performance, and mission outcomes; to determine the causes of major differences between planned and end results; and to help improve project management practices. Stage evaluations are conducted on the degree of investment success to ensure a positive return on investment, and decide whether continuation, modification, or termination of the investment is necessary to meet mission requirements. PIRs will be conducted on all major DOE IT investments and the type of review to be conducted will be based on the stage of investment development (overviews of the types of reviews are covered in section 5.3).

The goals of a PIR could be summarized as follows:

- To keep the Department and key stakeholders apprised of the investment's performance and contribution in support of strategic goals and objectives;

- To ascertain the degree of investment success, in particular, the extent to which it met its objectives, delivered planned levels of benefit, and addressed the specific requirements as originally defined;
- To ensure that the investment is meeting the mission support objectives;
- To examine the efficacy of all elements of the working business solution to see if further improvements can be made to optimize the benefit delivered;
- To learn lessons from this investment which can be used by the team members and by the organization to improve future investment work and solutions;
- To utilize PIR lessons learned to improve decision-making processes and to assess and improve the overall performance of the IT portfolio;
- To provide insight into the strengths and weaknesses of the processes and procedures performed in the Select and Control phases of the CPIC process;
- To re-assess an investments business case, technical compliance, and compliance against the enterprise architecture (EA); and
- To update the EA and CPIC processes, as needed.

5.3 Post-Implementation Review Process

5.3.1 Selection of Investment Review Candidates

The OCIO will develop a list of potential investment candidates and the IT Council will make the final decision as to which investments are ultimately selected for review.

In an effort to ensure the proper and appropriate oversight of various types of investments, DOE will require the following types of investment reviews:

- **PIRs for Newly Implemented Investments:** All major investments that have been implemented within the last 6-18 months will be required to conduct a PIR. For investments that have multiple phases of development, this timeframe applies to each module as it is implemented.
- **Mixed Life Cycle Investments transitioning to Steady State Investment Reviews:** The reporting requirements associated with many of the Department's management and oversight processes vary depending upon the life cycle stage of an investment. There is generally less stringent oversight, with regard to reporting requirements, when reporting on steady state investments. In an effort to standardize this transition process throughout the Department, any investment that becomes steady state will be required to conduct a review prior to being permitted to report as a steady state investment. This requirement will allow for more visibility as where investments are within their life cycle across the Department.

Additionally, senior management may initiate an out of cycle evaluation of an ongoing system if one or more of the following conditions exist:

- Sharp rise in the cost of operations;
- User complaints on system performance;
- Increase in the number of system software changes;
- Significant changes in scope or strategic plan;

- Major legislative changes; and/or
- Departmental change in policy.

5.3.2 Evaluation Factors

To complete a PIR, comprehensive investment information must be gathered, analyzed and documented in a PIR Summary and Recommendations Report. Although the same factors will be used to assess all investments, the specific information that the investment is required to report will vary based on the type of review being conducted. Detailed requirements and the criteria by which the investment will be assessed for each type of review will be determined.

The following general investment elements should be reviewed:

1) Cost and Schedule - A system's performance can be viewed from two distinct yet related perspectives: the management of the investment's development and implementation, and the benefit that the system provides. Earned value analysis calculates investment cost and schedule variances. A detailed explanation should be provided for cost overruns or schedule delays of 10% or more. Return on investment should be evaluated in terms of quality and benefits received from the investment. Where available, methods and data concerning estimation of cost and schedule should be gathered and analyzed.

Per DOE reporting requirements, investments with funding of $5M - $20M are given the option of using an ANSI standard compliant Earned Value Management (EVM) system, however must use a investment management system to report projected value and earned value to demonstrate cost, schedule and performance status. Investments with funding of $20M and greater, as well as investments with D/M/E funding of $5 or more in CY and BY, are required to use a full ANSI standard compliant EVM system. If an investment requires a full ANSI standard compliant EVMS, however has yet to meet ANSI compliance requirements, it is still required to report actual cost and schedule performance against the baseline.

2) Technical and Operational Performance - A technical evaluation of an investment results in an analysis of the system's operational readiness: projected vs. actual capabilities, statistical data, and the technical effectiveness of the new or ongoing system. Technical performance indicators deal with system (hardware or software) performance. Common measurements such as processing cycles, response times, storage capabilities, etc., are intended to assess the processing capability and reliability of the IT system. While these measures are useful for system evaluation, one should also measure the impact of system performance to user and mission capability and predetermined program objectives.

Functional requirements are also an important assessment area because they define the system data and processing requirements of customers and users. These requirements represent the baseline specifications and determine the basis for development activities. The baseline requirements should be compared against the functionality of the implemented system to determine if the system was developed as originally defined. If not, then any changes need to be documented and explanations provided.

If a Requirements Traceability Matrix (RTM) or other applicable Software Development Life Cycle (SDLC) documentation has not been adequately updated or maintained for each of the phases, the evaluation team might attempt to trace the partial requirement mapping against system functionality. The evaluation team may be asked to perform an independent

requirements traceability review to determine not only if requirements were adequately documented and tested, but that the stated requirements also were successfully implemented. The evaluation team in the PIR Report should identify any requirements not traceable through the implementation phase, because this may indicate that the development process did not achieve the originally desired system functionality.

Effective project management and assessment relies in part on developing a balanced set of performance measures that are informative and complete. These performance measures can include metric generation and analysis, proper estimation and planning as evidenced by estimates versus actuals, stakeholder confirmation of adherence to requirements, and other technical performance indicators.

3) Enterprise Architecture Compliance - System architecture needs to be carefully planned and designed to ensure that it will support the application and ensure that all interfaces, processes and system components are compliant with currently prescribed industry standards and the Department's Enterprise Architecture. This includes compliance with the business, process, data, and strategic components of the Enterprise Architecture. This process ensures that the technical architecture has a sound foundation that fully supports the Department's business functions. The original Architecture Plan should be compared against the implemented system in order to determine if there were deviations from the original requirements. A PIR assessment should also determine if all system components integrate with the current infrastructure.

4) Security - To conduct a security assessment, a document review and security analysis is performed to ensure that a complete security plan was developed, implemented and enforced. This review will ascertain if adequate security measures were devised and thoroughly tested to protect system data. In addition, documentation should be analyzed to determine whether the implemented system complies with the Department's security standards and procedures. Furthermore, if security problems are identified during the assessment, corresponding corrective actions should be documented and immediately enacted.

A thorough security analysis should compare the system security measures against security testing results documentation. These security measures need to be reviewed against the Department's certification and accreditation (C&A) guidelines. The Department requires that all systems processing, transmitting or storing DOE information regardless of classification or sensitivity must be certified and accredited. Based on that requirement each system should have supporting C&A documentation such as but not limited to the following: Initial Risk Assessment, System Security Plan, Configuration Management Plan, Contingency Plan, Results of previous assessments of existing operational systems (e.g., security testing and evaluation – also known as the Security Controls Assessment, independent verification and validation, independent audits, etc.). The evaluation team should review any deviations from these security standards, as well as any documentation that provides an explanation for the change. Finally, the evaluation team should collect the results of system penetration testing which will identify potential system weaknesses that may exist.

5) Project Risk Management - Project risk is a set of factors, both internal and external, that can affect the successful planning, design, and implementation of an IT investment. Consideration of how the project team anticipated and identified risks, developed risk management strategies, and employed those strategies to address risk, can provide valuable insight to the PIR. Risk management analysis should be reviewed to determine if risks were

encountered, and if so, whether they were managed effectively. The analysis should include the impact that the risks and their management had on the success of the investment.

6) Records Management - The Records Management Program provides the systematic control of the records capture, storage, maintenance, retrieval and use, and the disposition of records. From the Federal perspective, it is the planning, controlling, directing, organizing, training, promoting, and other managerial activities involved in records creation, maintenance and use, and disposition in order to achieve adequate and proper documentation of the policies and transactions of the Federal Government and effective and economical management of agency operations.

Records Management, as related to electronic information systems (EIS), is complex as the information maintained in the EIS is fluid. During the development of the EIS, decisions concerning the records management aspects of the EIS must be made to facilitate the retention of the "records information" and any processes that store, retrieve and replace this information during its use. Additionally the necessary disposition approvals from the DOE Records Officer and the National Archives and Records Administration need to be requested and obtained prior to implementation. These features should be evaluated during the PIR and subsequent annual reviews.

Records management addresses the life cycle of records, i.e., the period of time that records are in the custody of Federal agencies. The life cycle usually consists of three stages:

- Creation or receipt;
- Maintenance and use; and
- Disposition.

It is important to ensure that all Programs are complying with and meet all the requirements associated with the Department's Records Management policies and procedures.

7) Impact on Goals and Strategic Objectives - Analysis is conducted to determine whether the investment met the stated outcomes and benefits and whether these outcomes continue to be in alignment with the Department's goals and objectives. Strategic performance analysis should be documented and include how well the investment is meeting departmental goals, and the reasons why there may be departures from the overall strategy.

8) Impact on Stakeholders - Stakeholder perception and satisfaction must be assessed to determine the extent to which the investment is meeting stakeholder needs. Stakeholders include users, customers, and business process owners. The impact will be typically measured through user satisfaction surveys and interviews. The surveys should ask questions that will reveal the investment's ability to meet business process support demands.

9) Best Practices and Lessons Learned - Successful procedures or practices as well as highlighted issues or problems that are uncovered during the PIR should be recorded and captured as best practices and lessons learned, and applied to make improvements to the ITIM process and future IT investments. Lessons learned is knowledge derived from experience to promote the recurrence of desirable outcomes or preclude the recurrence of undesirable outcomes. Use of lessons learned is a principle component of all levels of organizational culture committed to continuous process improvement. Lessons learned enable the knowledge gained from past experience to be applied to current and future investments to avoid the repetition of

past failures and mishaps. Lessons learned documentation can represent both positive and negative experiences. The ability of the Project Manager to more effectively manage an investment is greatly increased through this resource. Further, a review of lessons learned from prior investments will help identify problems that may materialize during the investment. Analysis of these problems should lead to ways to avoid or mitigate them. Reviewing lessons learned helps in setting a realistic schedule and estimating accurate costs and feeds the continuous improvement process.

The PIR should include a descriptive analysis of investment impact on the department's current ITIM maturity level. Documentation should include an assessment of whether good or bad decisions were made by the project manager and review boards, and the impact that these decisions had on the investment's performance.

5.3.3 Evaluation Process

As part of the PIR process, the appropriate template and scoring criteria will be provided to the Programs so that they can implement the Department's approved process when conducting their PIRs. The Programs will be required to complete the provided template along with the Program's proposed assessment of the investment's performance. All Programs will apply the same evaluation criteria when evaluating their investments to ensure consistent scoring across the Department.

The Programs will be required to report the results of their PIR, including the completed template, to the IT Council by a specified deadline. The IT Council will review the reported results. Additionally information may be required from the Programs with regard to the results of the PIR. The IT Council will provide any final recommendations to the OCIO and the OCIO will authorize any corrective actions. The Program may be required to report back on the status of their corrective actions at a follow-up meeting, as necessary.

In an effort to reduce the burden placed on project managers due to overlapping data calls, whenever possible the data calls associated with the Evaluate Phase will be consolidated with other existing data calls. For example, all major investments are required to report on a quarterly basis as part of the Department's Control process. If possible, the data calls associated with the PIRs will be conducted in conjunction with the quarterly Control Reviews. Selected PIR candidates will be notified in advance that they are required to participate in a PIR. The evaluation process associated with a PIR is a generally more in-depth analysis of an individual investment, however the investment is evaluated on some of the same evaluation factors, as the Control Review requires. Therefore, any investment that is required to participate in a PIR would only be required to submit the PIR documentation as part of the Control Review process. The necessary data submitted as part of the PIR will be extracted to allow for a Control Review score to be ascertained. For example, there may be overlap between some the security and cost and schedule data that is required for both the Control Review and the PIR. The investment assessment will be presented during the Control Review meeting, so as to decrease the number of times the IT Council is required to meet. The IT Council will have the opportunity to make recommendations regarding the investment as well as recommendations for how to improve the overall evaluation process.

5.3.4 PIR Scoring Process

Investment scores will be determined based on assessment against investment-specific questions. Each question will be scored on a four-point scale:

- 4 Points – Excellent
- 3 Points - Good
- 2 Points – Satisfactory, but could use improvement
- 1 Point – Needs Significant Improvement
- 0 Point – No information provided

The total points earned and a percentage will be calculated. Appendix E contains the listing of questions, sub-categories and scoring ranges that will be used by the PIR team in the review process. Scoring criteria have been developed for a score of 0, 2 and 4. A score of 1 and 3 has been left to the discretion of the reviewers. The investment will be scored only on questions within that category and an overall investment score will be developed. The total points earned out of possible total points will be calculated. Based on the overall score, the following actions will apply:

- Any investment that receives a score of 80-100% will not require additional action.
- Any investment that receives a score of less than 80% will be required to submit a recovery plan to the IT Council that incorporates all required corrective action.
- Any investment that receives a score less than 60% will require follow-up meetings to monitor the recovery process.

Additional steps may be taken until the IT Council and OCIO are satisfied that the investment is taking the necessary steps to improve its performance. Following the PIR meeting, documentation of the meeting and summary Lessons Learned package will be developed by PIR Team. In addition, if specific actions for getting investments back on track are identified by the OCIO, guidance for taking these actions will also be prepared and provided to the Programs. Best practices and lessons learned will be reported Department-wide to ensure that other investments may learn from the evaluated investment.

5.3.5 Identifying Lessons Learned

Using the collective results of PIRs, DOE is able to modify the organization's existing investment selection and control processes based on lessons learned. The information from PIRs helps management develop better decision-making criteria during the CPIC Selection phase and improve the management of ongoing projects during the CPIC Control phase.

Notions of “continuous improvement” and implementing “best practices” are not achievable unless effective feedback mechanisms are developed. The objective of any feedback system should be to link the findings back to the right people, at the right time and in the right format, for easy application to each new project. The implementation of the Evaluate Phase closes the loop with regard to the CPIC process by facilitating feedback on the Department’s overall CPIC processes and their refinement.

Given its flexibility and ability to identify areas of greatest potential gain, the PIR is arguably the single most cost effective tool available for improving project management. Whatever those improvements may be, one of the key benefits of conducting a PIR is to apply the lessons learned from existing IT projects to develop better processes for IT capital planning. The value of a PIR is diminished without systematic approach and techniques for correcting the process in response to lessons learned.

In addition to communicating the closure of a project in writing, it is also advisable to have a mechanism for group review. The GAO recommends, "There should be some mechanism or process to ensure that information is being aggregated and fed back in to improve the investment management process."[3] A "lessons learned" session is a valuable closure mechanism for project team members, regardless of the project's success. Some typical questions to answer in such a session include:

- Did the delivered product meet the specified requirements and goals of the project?
- Was the user/client satisfied with the end product?
- Were cost budgets met?
- Was the schedule met?
- Were risks identified and mitigated?
- What could be done to improve the process?

The PIR may yield lessons learned about the following:

- Project management process;
- Systems development process;
- Contracting methodology used;
- Deficiencies/gaps in the current policy;
- Training received and/or provided;
- Conversion tasks from legacy systems to current architecture;
- Software used; and
- Improvements in the competency and composition of the project team

For example, the cost, risk, and benefit criteria for the Selection phase may be refined to ensure greater success of future IT implementations. In the Control phase, there may be more appropriate performance measures that could be established to improve the monitoring of the IT investments. In addition, future IT investments should be required to comply with the standards developed by the lessons learned. As such, this section will examine the operational aspects of applying the lessons learned and establishing a repository for access.

5.3.6 Evaluate and eCPIC

All templates associated with this phase will be developed and maintained within eCPIC. Since the evaluation factors associated with the Evaluate phase will overlap with other phases of the CPIC process, namely the Control phase, the maintenance templates within eCPIC will allow

[3] General Accounting Office, "Assessing Risks and Returns: A Guide for Evaluating Federal Agencies' IT Investment Decision-making," GAO/AIMD-10.1.13, v. 1.0, February 1997.

multiple templates to be linked ensuring that information is only required to be updated in one place.

Appendix A. FEDERAL LEGISLATION, REQUIREMENTS, & GUIDANCE FOR IT INVESTMENT MANAGEMENT

The Department of Energy's CPIC process and IT Governance Program will comply with several pieces of IT management legislation and regulatory guidance, including:

Clinger-Cohen Act (CCA) of 1996. The CCA was formerly known as the Information Technology Management Reform Act or ITMRA. It requires each agency to undertake capital planning and investment control by establishing a process for maximizing the value and assessing and managing risks of IT acquisitions of the executive agency.

Federal Acquisition Streamlining Act (FASA) of 1994. FASA requires agencies to define the cost, schedule and performance goals for major acquisition programs and to monitor and report annually on the degree to which those goals are being met. Agencies must assess whether acquisition programs are achieving 90% of their cost, schedule and performance goals.

Government Performance and Results Act (GPRA) of 1993. GPRA requires agencies to prepare updateable strategic plans and to prepare annual performance plans covering each program activity displayed in the budget. The performance plans are to establish performance goals in objective, quantifiable and measurable form and performance indicators to be used in measuring relevant outputs, service levels and outcomes.

Paperwork Reduction Act (PRA) of 1995. PRA intends to: minimize the paperwork burden resulting from collection of information by or for the Federal Government; coordinate, integrate and make uniform Federal information resources management policies and practices; improve the quality and use of Federal information to minimize the cost to the government of the creation, collection, maintenance, use, dissemination, and disposition of information; and ensure that information technology is acquired, used, and managed to improve efficiency and effectiveness of agency missions.

Chief Financial Officers' Act (CFOA) of 1990. CFOA establishes the foundation for effective financial management, including requiring agencies to develop and effectively operate and maintain financial management systems. The CFO Act focuses on the need to significantly improve the financial management and reporting practices of the federal government. Having accurate financial data is critical to understanding the costs and assessing the returns on IT investments. Under the CFO Act, CFO's are responsible for developing and maintaining integrated accounting and financial management systems that include systematic measurement information on agency performance.

OMB Circular A-11, Part 2: Preparation and Submission of Strategic Plans. A-11, Part 2, provides guidance for preparing and submitting overall agency strategic and performance plans required by GPRA.

OMB Circular A-11, Part 3: Planning, Budgeting, and Acquisition of Fixed Assets. A-11, Part 3 provides guidance on the planning, budgeting and acquisition of fixed assets, which include IT capital assets, and requires agencies to provide information on these assets in budget submissions, and provides guidance for planning. It also provides guidance for coordinating collection of agency information for OMB reports to Congress for FASA and the CCA. Under FASA, OMB is required to report on the cost, schedule and performance goals for asset acquisitions and how well agencies are meeting their goals. CCA requires that OMB report on

program performance in information systems and how benefits relate to accomplishing the goals of the agency.

OMB Circular A-130: Management of Federal Information Resources. A-130 provides information resource management policies on Federal Information Management / Information Technology (IM/IT) resources required by the PRA of 1980 as amended.

OMB Memorandum M-97-02, Funding Information System Investments. This memorandum contains eight decision criteria commonly referred to as Raines Rules, which OMB will use to evaluate major information system investments. Raines Rules are described below.

Executive Order 13011, Federal Information Technology. The executive order highlights the need for agencies to significantly improve the management of their information systems, including the acquisition of information technology, by implementing the relevant provisions of PRA, CCA and GPRA. Agencies are to refocus their information technology management to directly support their strategic missions, implement an investment review process that drives budget formulation and execution for information systems, and rethink and restructure the way they perform their functions before investing in information technology to support that work. Agency heads are to strengthen the quality and decisions of employing information resources to meet mission needs through integrated analysis, planning, budgeting, and evaluation processes.

OMB and IT INVESTMENT MANAGEMENT

The Office of Management and Budget (OMB) has developed some significant requirements for investing in information technology. An early guideline provided to agencies is known as the "Three Pesky Questions". OMB recommends each agency answer these questions when considering an IT initiative:

Does the government need to do it?
If so, can some other organization do it better than we can?
If not, have we reengineered our process so we can spend less and use the technology most efficiently?

In 1996, OMB Director Frank Raines issued policy guidelines for funding IT investments. This policy is known as "Raines' Rules" and directs agencies to ensure IT investments:

- Support core or priority Federal government missions.
- Are impossible for another agency, company, or government to efficiently perform.
- Support work already redesigned to cut costs, improve efficiency and use off-the-shelf technology.
- Show a return on investment equal to or better than other uses of available resources.
- Are consistent with agency and government wide architectures that integrate work and information flows with strategic plans; incorporate standards allowing information exchange and resource sharing; and retain flexibility in the choice of suppliers.
- Reduce risk by avoiding custom design, using pilot projects and prototypes, establishing clear measures of success, securing buy-in from users.
- Are put into effect in phased, successive chunks that are short-term and narrow in scope and independently solve part of an overall mission problem.
- Appropriately allocate risk between government and contractor, tie payments to accomplishments, and use commercial technology.

Appendix B. DOE SELECT CRITERIA

Exhibit 300 Pre-Screening Criteria

The following criteria are to be used in the pre-screening of Exhibit 300s that are submitted to the Office of the CIO for review. The purpose of these criteria is to quickly identify business cases that do not contain the required data. Once inadequate business cases are identified, they will be sent back to the Program Offices for revision. The goal of this pre-screening effort is to reduce the number of review iterations required to improve a business case to the point where it is receiving an overall score of 4 or 5 with a score of 4 or better in the Security section. Any business case that does not meet the following pre-screening criteria will be sent back to the Program prior to being submitted into the formal OCIO review and scoring process.

Below are the criteria to use when pre-screening business cases during the BY 2007 IT Reporting cycle:

General Review Criteria

The Exhibit 300 for each investment should be consistent across all sections (i.e., all sections support the same approach and acquisition strategy, financial figures appear to be consistent across the different sections, no sections are left blank, etc.)

Summary of Spending table

Financial figures are provided for FY 2004, 2005, 2006 and 2007 unless investment was initiated after any of these years.

The IT Security % is equal to the Security Funding amount that is identified in the Security Section of the Exhibit 300.

If the Exhibit 300 indicates that this investment is in steady state operations in the Background section, no DME funding should be listed for BY 2007 in the Summary of Spending table.

I.B Justification

All questions in this section need to be addressed for the investment.

I.C. Performance

The PRM table must be complete for any new investments or investments that have DME funding identified in the Summary of Spending table for FY 2005 and beyond

I.D. Project Management

All questions in this section need to be answered appropriately and completely.

I.E. Alternatives Analysis

Three Alternatives must be listed in this section *not* including the Status Quo

The Life Cycle Costs Analysis table has been completed for all three alternatives

The alternative that was selected needs to be identified if the planning phase has been completed for this investment. Additionally, all other sections in the business case (e.g., Investment Description) needs to support the chosen alternative

The Return on Investment (ROI) needs to be defined for this investment. An appropriate response should provide actual values

I.F. Risk Inventory and Assessment

All 19 Risk areas need to be addressed in the business case for the investment.

I.G. Acquisition Strategy

All questions in this section need to be addressed for the investment.

The information in the Acquisition Strategy section needs to be consistent with the information provided in the other sections of the business case (e.g., Investment Description, Justification, selected alternative in Alternatives Analysis, etc.)

I.H. Project (Investment) and Funding Plan

A description of the EVMS or Operational Analysis methodology must be provided in the response to the first question in this section

Milestones need to be provided for BY 2007 in the I.H.2 table, or the I.H.3 (table if the investment has been rebaselined.)

The I.H.2 table needs to be completed if the investment is still tracking to its original baseline goals

The I.H.3 table needs to be completed if the investment has been rebaslined since it was initiated.

Actual performance results need to be provided in the I.H.4 table if milestones with activity in FY 2005 or earlier are reported in the current baseline.

II.A. Enterprise Architecture

All questions in this section need to be addressed for the investment.

The BRM table needs to be completed for each investment.
The SRM table needs to be completed for each investment.
The TRM table needs to be completed for each investment.

II.B Security and Privacy

A dollar amount needs to be provided in the response to the question on Security Funding amount for the investment.

A specific date needs to be identified for when the Security Plan was completed/updated, or when it will be completed/updated for the investment.

A specific date needs to be identified for when the C&A was or will be completed.

If the Exhibit 300 indicates that a Privacy Impact Assessment (PIA) has been conducted, then a PIA needs to be submitted with the business case to the OCIO to ensure that it is forwarded to OMB.

FY07 Exhibit 300/Select Scoring Criteria

Business Case (BC) (composite of all categories) Total Score for Business Case

Projects scoring 5 and meeting program requirements are automatically recommended for funding. Projects scoring a 4 and meeting program requirements, and meeting most of the business case requirements are recommended for funding and the agency is instructed to continue improvements in the areas identified as needing work. Projects scoring 3 or below have the opportunity to improve to a 4 or degrade to a 2 rather easily. Projects scoring a 2 or below are not recommended for funding.

Therefore, a business case must score a 31 overall AND a 4 in Security to "pass".

Score		Definition
5	41–50	Strong documented business case (including all sections as appropriate).
4	31–40	Very few weak points within the BC but still needs strengthening.
3	21–30	Much work remains to solidify and quantify BC. BC has the opportunity to either improve or degrade very quickly.
2	11–20	Significant gaps in the required categories of the BC.
1	1–10	Inadequate in every category of the required BC.

Scoring Elements:

<u>Supports the President's Management Agenda Items (AI) (Multiple Sections)</u>

5 This is a collaborative investment that includes industry, multiple agencies, State, local, or tribal governments, uses e-business technologies and is governed by citizen needs. If the investment is a steady state investment, then an E-Gov strategy review is underway and includes all of the necessary elements. If appropriate, this investment is fully aligned with one or more of the Presidential Initiatives.

4 This is a collaborative investment that includes industry, multiple agencies, State, local, or tribal governments, uses e-business technologies though work remains to solidify these relationships. If investment is a steady state investment, then an E-Gov strategy review is underway but needs work in order to strengthen the analysis. If appropriate, project supports one or more of the Presidential Initiatives but is not yet fully aligned.

3 This is not a collaborative investment though it could be and much work remains to strengthen the ties to the President's Management Agenda. If a steady state investment and no E-Gov strategy is evident, this investment will have a difficult time securing continued or new funding from OMB. If appropriate, this project supports one or more of the Presidential Initiatives but alignment is not demonstrated.

2 This is not a collaborative investment and it is difficult to ascertain support for the AI. If this is a steady state investment, then no E-Gov strategy was performed or is planned.

1 There seems to be no link to the AI and E-Gov strategy.

DOE Scoring Guidance:

For new investments, the scoring decision is based on inclusion of language related to collaboration (can the system be used by multiple agencies), use of e-business technology (web services, XML, J2EE, NET technologies, etc.), and answers to Part I Question 2 about alignment with the President's Management Agenda.

For ongoing (legacy) investments, the scoring decision is based on the completion of an e-Government strategy review (3-no review, 4 review underway, 5 review underway AND includes all necessary elements).

The necessary elements for an e-Government strategy review are:

- Justification language that discusses the use of e-business tools (or why they cannot be used for this investment)
- Discussion of the "current way" of doing business and why that is most advantageous and cost-effective (the OMB assumption is that the use of e-business tools is the most cost effective solution unless the report specifically refutes that)
- Performance Goals as the project stands today (out of date PG data is not acceptable)
- A future focused Alternatives Analysis
- Actual performance results on how the project is meeting organizational goals not just cost, schedule and performance goals for the project

Acquisition Strategy (AS) (Part I, Section I.G)

5 Strong Acquisition Strategy that mitigates risk to the Federal Government, accommodates Section 508 as needed, and uses contracts and statements of work (SOWs) that are performance based. Implementation of the Acquisition Strategy is clearly defined.

4 Strong Acquisition Strategy that mitigates risk to the Federal Government, accommodates Section 508 as needed, uses contracts and statements of work (SOWs) that are performance based. Acquisition strategy has very few weak points which agency is working to strengthen, and the implementation of AS is clearly defined.

3 Acquisition strategy does not appear to successfully mitigate risk to the Federal Government, accommodates Section 508 as needed, much work remains to solidify and quantify the AS, and contracts and SOWs do not appear to be performance based.

2 Acquisition strategy does not appear to successfully mitigate risk to the Federal Government, does not accommodate Section 508, does not appear to use performance based contracts and SOWs, and there is no clear implementation of the acquisition strategy.

1 There is no evidence of an AS.

DOE Scoring Guidance:

In order to receive a score of 4 or 5, the response must explicitly discuss that contracts (or statements of work) are performance based.

The difference between a score of 2 and 3 seems to be successful accommodation of section 508 (accessibility of information and technology). There is not a single agency-wide method of accommodation for 508, so the answer needs to show how the specified investment ensures compliance with Section 508.

A score of 1 is given only if no AS data is provided.

Project (Investment) Management (PM) (Part I, Sections I.D and I.H, and overall business case)

5 Project is very strong and has resources in place to manage it.

4 Project has few weak points in the area of PM and agency is working to strengthen PM.

3 Much work remains in order for PM to manage the risks of this project.

2 There is some understanding of PM for this project but it is very rudimentary.

1 There is no evidence of PM.

DOE Scoring Guidance:

If an investment does not provide good cost,, acquisition strategy, EVMS, and risk management information, it should be down graded for project management too (the logic being that a well managed project would have all that information and would be able to report it in the Exhibit 300.)

The integrated project team (IPT) should consist of members with the following skills or perspective/contribution: budgetary, procurement, technology, earned value management/project control, direct users, and capital planning. The multi-disciplinary team should be led by a project manager responsible for planning, procurement, and cost/schedule/performance goals.

All investment should indicate the level of project management support that is required for the investment. Also, the investment should indicate whether the current project manager has been qualified at the appropriate level, given the project management requirement. (A reference spreadsheet was distributed with the training material that identifies the project management level for all major investments and whether the assigned PM has been qualified at the appropriate level. The spreadsheet can be used to verify the information reported in the Exhibit 300.)

The distinction between a 3 and a 2 is hard to delineate, the only rule of thumb is a 3 should be an “average” score (think a C in school). If you read the section and feel that it is bad, it should score below 3.

Enterprise Architecture (EA) (Part II, Section II.A) for IT Only.

5 This investment is included in the Agency EA and CPIC process. Investment is mapped to and supports the FEA and is clearly linked to the following FEA reference models: Business Reference Model (BRM), Performance Reference Model (PRM), Service Component Reference Model (SRM), and Technical Reference Model (TRM). BC demonstrates the relationship of the investment to the business, data, application, and technology layers of the EA.

4 This investment is included in the agency's EA and CPIC process. Investment is mapped to and supports the FEA. Investment is clearly linked to the BRM but work is continuing to map the investment to the PRM, SRM, and TRM. BC is weak in demonstrating the relationship of the investment to the business, data, and application, and technology layers of the EA.

3 This investment is not included in the agency's EA and CPIC process, was not approved by the agency EA committee, or does not link to the FEA. BC demonstrates a lack of understanding on the layers of the EA (business, data, application, and technology).

2 While the agency has an EA framework, it is not implemented in the agency and does not include this investment.

1 There is no evidence of a comprehensive EA in the agency.

DOE Scoring Guidance:

A score of 1 or 2 is primarily given to agencies that do not have a comprehensive EA (for the agency) and OMB has already accepted DOE's EA.

A 3 should be given to responses with poor EA answers, a 4 would be for responses that are obviously working on their EA linkages, and a 5 would be for responses with strong EA answers.

Alternatives Analysis (AA) (Part I, Section I.E)

5 AA includes three viable alternatives, alternatives were compared consistently, and reasons and benefits were provided for the alternative chosen.

4 AA includes three viable alternatives, however work needs to continue to show alternatives comparison, and support must be provided for the chosen alternative.

3 AA includes fewer than three alternatives and overall analysis needs strengthening.

2 AA includes weak AA information and significant weaknesses exist.

1 There is no evidence that an AA was performed.

DOE Scoring Guidance:

The language in the criteria for a 3 would lead you to believe that any investment that lists three viable alternatives regardless of the quality of their supporting material should score a 4 or higher.

However, if an investment's alternative analysis was generally poor, but they had 3 alternatives listed, it should not automatically be scored as a 3.

Ensure that non-viable alternatives are not "counted" as part of the 3 viable alternatives needed for a 4 or 5 score. OMB has indicated that the Status Quo is not a viable alternative. Therefore, in addition to Status Quo, there needs to be three other viable alternatives.

Cost elements and the associated costs need to be provided for each alternative and quantified benefits need to be provided for the selected alternative in order for the investment to receive higher than a 3 for this section. All questions must be supported by quantifiable data in order for an investment to receive a 5. The NPV table must be complete and a ROI provided.

Risk Management (RM) (Part I, Section I.F)

5 Risk assessment was performed for all mandatory elements and risk is managed throughout the investment.

4 Risk assessment addresses some of the risk, but not all that should be addressed for this investment.

3 Risk management is very weak and does not seem to address or manage most of the risk associated with the investment.

2 Risk assessment was performed at the outset of the investment but does not seem to be part of the program management.

1 There is no evidence of a risk assessment plan or strategy.

DOE Scoring Guidance:

In order to receive a high score in this section, the response must have all 19 risk elements addressed in the risk table AND give a date for the project risk management plan. Be sure that the table is complete and that all fields have been answered.

A score of 1 should be given when no risk data is provided and a score of 2 should be given for obsolete or incomplete data.

Be sure that each risk is adequately and completely addressed. The mitigation strategy for each category should make sense and clearly articulate how the investment plans to mitigate that risk should it occur and the current status of that risk. If there are any risks that do not apply to a specific investment, it is NOT sufficient to leave the risk category blank. If a risk category does not apply, then that should be clearly stated in the table and an explanation provided.

Performance Goals (PG) (Part I, Section I.C)

5 Performance goals are provided for the agency and are linked to the annual performance plan. The investment discusses the agency's mission and strategic goals, and performance measures are provided.

4 Performance goals are provided for the agency and are linked to the annual performance plan. The investment discusses the agency's mission and strategic goals, and performance measures are provided. Some work remains to strengthen the PG.

3 Performance goals exist but the linkage to the agency's mission and strategic goals is weak.

2 Performance goals are in their initial stages and are not appropriate for the type of investment. Much work remains to strengthen the PG.

1 There is no evidence of PG for this investment.

DOE Scoring Guidance:

To achieve a score of 4 or above, the strategic goal cited must come from the DOE Strategic Plan or the Annual Performance Plan available on the DOE CFO website.

A score of 1 is given to reports that leave the PG section blank and a score of 2 should be given when the information provided in the section is incomplete.

OMB is looking for investments to demonstrate that they are closing performance gaps within a Program Office or across the Department. In order to score a 5 in this section, the correct table(s) should be completed, all goals should be quantifiable, and actual performance results provided.

Security and Privacy (SE) (Part II, Section II.B)

5 SE issues for the investment are addressed, all questions are answered, and a privacy impact assessment is provided in appropriate circumstances. Security/privacy detail is provided about the individual investment throughout the life cycle to include budgeting for SE.

4 SE information for the investment is provided but there are weaknesses in the information that need to be addressed.

3 SE information for the investment is provided but fails to address the minimum requirements.

2 SE information points to an overall Agency Security Process with little or no detail at this investment level.

1 There is no SE information provided for the investment.

DOE Scoring Guidance:

In order to receive a 5, the response must provide a dollar value for security in the budget year (07) AND provide reasonable answers to all SE questions. This value should coincide with the security percentage provided in the Summary of Spending table. For example, if the total FY07 funding for a specified investment is $4M and the investment has stated in the Summary of Spending that 10% of the FY07 budget will be used to provide security for the investment, then the dollar value provided in the Security section should be $400K. Be sure that these costs align across sections.

Reviewers must be careful to read the SE answers in context of the entire Exhibit 300. Be sure that answers are investment specific. It is not sufficient to state Department-wide security policies. The answers must clearly state how security is ensured for the specific investment.

Business cases that receive scores of less than 4 in security automatically fail regardless of the overall points accumulated. The business case must provide the date when the C&A was completed, or will be completed, for the investment in order to receive a 4or better.

Additionally, the business case must also provide the date when the security plan was completed/updated, or when it is scheduled for completion in order to receive a 4 or better in this section. If the date of the security plan is older than 3 years, then it should not receive a score higher than 3.

Performance Based Management System (PB) (Part I, Section I.H)

5 Agency will use, or uses an EVMS that meets ANSI/EIA Standard 748 and investment is earning the value as planned for costs, schedule, and performance goals.

4 Agency uses the required EVMS and is within the variance levels for two of the three criteria. Work is needed on the third issue.

3 Agency uses the required EVMS but the process within the agency is either very new, not fully implemented, or there are weaknesses in this investment's EVMS information.

2 Agency seems to re-baseline rather than report variances.

1 There is no evidence of PB.

DOE Scoring Guidance:

In order to receive a 5 in this section, discrete milestones that clearly articulate how the investment plans to use the requested FY07 funding must be provided. Milestones should span no more than 1 year. Steady state investments may provide one annual milestone showing the yearly maintenance funding required for the investment. However, investments requesting DME should provide clear milestones showing the planned milestones associated with that DME funding, in addition to any appropriate maintenance milestones. Actual data should be provided against any milestones that have been previously reported to OMB and are completed to date.

The annual total of proposed milestones should match the total amount of funding requested for the year in the Summary of Spending table. For example, if the milestones for FY07 total $10 million, then the annual request for funding for FY07 in the Summary of Spending table should also total $10 million.

If an investment experiences a greater than -10% cost or schedule variance, then the Exhibit 300 should explain why this occurred and what corrective actions will be taken to return the investment to within acceptable cost and schedule variance thresholds.

Life-Cycle Costs Formulation (LC) (Multiple Sections)

5 LC seem to reflect formulation that includes all of the required resources and is risk-adjusted to accommodate items addressed in the RM. It appears that the investment is planned well enough to come in on budget.

4 LC seem to reflect formulation of some of the resources and some of the issues as included in the risk adjustment strategy. Work remains to ensure that LC costs are accurately portrayed.

3 LC seem to reflect formulation of the resources but are not risk adjusted based on the risk management plan.

2 LC seem to include some of the resource criteria and are not risk adjusted.

1 LC do not reflect a planned formulation process.

DOE Scoring Guidance:

In order to score a 3 or higher, the response must explicitly state the costs are risk adjusted. A score of 5 would discuss the basis for the risk adjustment.

A 3 or higher should only be given if costs seem “reasonable” given the context of the project.

The Summary of Spending table needs to be complete. Costs should be provided for all fiscal years when the investment is active. FTE costs should also be included in the Summary of Spending table.

If the investment indicates it is in steady state phase, then no DME funding should be listed in the Summary of Spending table

Be sure that the funding is consistent across sections. For example, make sure that the total FY06 funding provided in the Summary of Spending table matches the FY06 total planned costs provided in the I.H tables. Be sure that the security percentage stated in the Summary of Spending table is in line with the security costs stated in the security section. Furthermore, acquisition costs/percentages provided in the Acquisition section should align with the acquisition costs provided in the Summary of Spending table.

Appendix C. DOE CONTROL REVIEW TEMPLATE AND SCORING CRITERIA

DOE Quarterly Control Review Template

Investment Information

1. Date	2. Investment Name
3. UPI Number/eCPIC Exhibit 300	4. Program Office
5. Project Sponsor	6. Sponsor Phone Number

Project Management Certification

7. Project Manager's Name	8. Is the Project Manager for this investment certified to the level of the System?		Yes
			No
	If no, provide the planned date by which your project manager will be certified at the level of the investment.		

Cost, Schedule, and Performance

9. If applicable, state any actions taken to address issues that were identified in the previous quarterly Control Review cycle.

10. Recap the investment's funding profile (Funding profile should be based on the baseline in the current business case:

$M	PY	CY	BY	BY+1
DME				
SS				
Total	$ -	$ -	$ -	$ -

11. In accordance with Order 413, which Critical Decisions (CDs) have been accomplished for this investment (i.e., CD-0, 1, 2, 3, or 4)?

	Approval Date	Approver	Remarks
CD-0			
CD-1			
CD-2			
CD-3			
CD-4			

D/M/E Component - Earned Value Management Data

12. For all D/M/E activities related to the investment, enter the rolled-up EVM data from your ANSI-standard compliant EVM System and perform the required EVM calculations in to the tables below.

Project Start Baseline Date:		Budget at Completion (BAC) $M:		

						Latest Month/ Year here
Month/Year						
ACWP(month)						
BCWS(month)						
BCWP(month)						
ACWP(cum)						
BCWS(cum)						
BCWP(cum)						

	Month/Year						
BCWP(cum) - ACWP(cum)	CV						
CV/BCWP(cum)	CV%						
BCWP(cum)/ACWP(cum)	CPI						
BCWP(cum) - BCWS(cum)	SV						
SV/BCWS(cum)	SV%						
BCWP(cum)/BCWS(cum)	SPI						
BAC/CPI	EAC						

13. When was, or will, the project's EVM be certified as ANSI STD 748 compliant by OECM? (Note that a site or contractor EVM certification does not necessarily indicate that certified process is being applied to the project.)

14. For investments exceeding + or - 10% cost or schedule variance (CV% SV%) provide a brief description as to how and by when you plan to remediate this variance.

15. In accordance with Order 413, which Critical Decisions (CDs) have been accomplished for this investment (i.e., CD-0, 1, 2, 3, or 4)?

Steady State Component

16. Breakdown SS funding associated with the following areas:

$M	PY	CY	BY	BY+1
Project Management				
Help Desk & Technical Support (personnel, hosting fees, etc)				
Cyber Security				
Configuration Management				
Software License Maintenance				
Hardware Replacement				
Other (Identify)				

Operational Cost and Schedule Data

17. For all steady state activities related to the investment, enter the up-to-date cost and schedule information into the table below:

Operational Cost Under runs/Overruns	$0.00
Cost Under runs/Overruns %	0%
Operational Schedule Under runs/Overruns	$0.00
Schedule Under runs/Overruns %	0%

Investment Status as of:	

	Planned			**Actual**			
Program Description	**Start Date**	**End Date**	**Planned Cost for entire Program (in millions)**	**Start Date**	**End Date**	**Percent Complete as of 11/15/04**	**Actual Cost (in millions) as of 11/15/04**
			$ -				$ -
			$ -				$ -
			$ -				$ -
			$ -				$ -
			$ -				$ -
			$ -				$ -
		Total	$ -			**Total**	$ -

18. For investments with Operational Cost or Schedule Under runs/Overruns of + or - 10%, provide a brief description as to how and by when you plan to remediate this variance.

Performance Table

19. Complete the table below by listing the planned performance goals for your investment and the achievements to date. Identify the Operational Indicators used for this project (e.g. effectiveness, efficiency, productivity, availability, reliability, maintainability and security) and the measurable goal to be achieved.

DOE Strategic Goal(s) Supported	

Program Goal(s) Supported	Existing Baseline	Planned Performance Improvement Goal	Actual Performance Improvement Results	Planned Performance Metric	Actual Performance Metric Results

20. If the Performance Table is left blank, why are performance goals not reported in the Control Review Template? Are they tracked internally within the Program?

21. If the investment is not achieving 90% or more of its performance goals, provide a brief description as to how you plan to remediate this issue.

Security

22. Does this investment contain any IT systems?	Yes		No	

23. Provide the date when the investment transitioned from the planning phase to the operational phase. If the investment is still in the planning phase, provide the date when this transition is expected to occur.

24. What, if any, technical changes occurred to the operational component of the investment since the last quarterly Control Review Template submission?

25. Do all systems within this investment have certification and accreditation? If so, specify the date(s) of the last certification and accreditation. If no, provide the planned date by which your systems will be certified and accredited.		Yes
		No

26. Does this investment have an up-to-date security plan? If no, please provide the date when the security plan will be updated.	Yes		No	

Project Management Score

27. Project Manager's Score	Red		Yellow		Green	

28. Additional Comments

29 .Project Manager Approval	30. Date
31. Program/Staff Office Approval	32. Date

DOE Control Review
Certification Form for Steady State Investments

Revision History

Revision Date	Comments
May 11, 2005	This version supercedes all previous versions

Overview

This form serves as a reporting tool that is to be used in the Department of Energy's OCIO IT investment control review process for steady state investments. It provides Program and Staff Offices with a means to certify an investment's performance without having to complete the Control Review Template. It also enables them to certify that certification and accreditation (C&A) has been received, and the project manager has received Project Management Certification for their investment. However, this certification can only be provided for investments that meet the following criteria:

- 100% of the investment's funding is allocated to steady state operations
- Investment is operating within – 10% of its cost and schedule goals
- Investment is achieving at least 90% of its performance goals

Investments that meet these criteria should complete and submit this form to the OCIO each quarter as part of the control review process. Additionally, for investments where this form is completed, Program and Staff offices must have the data that supports this certification on record (i.e. – cost, schedule and performance data). In the event of an audit or OMB request for more information, the Program or Staff Office will need to furnish this data.

Investments that do not meet these criteria must report investment performance by completing the DOE Control Review Template.

Investment Information:

Date:
Investment Name:
UPI Number:
Program Office:
Project Manager & Phone Number:

Project Management Certification:

Enter the completion or planned completion date when the Project Manager was or will be certified at the level of the investment.
Date: _____

What is the project manager certification level required for this investment? Was the assessment of required level based on OCIO guidance provided to the ITC and via the OCIO website?

Security:

Enter the completion or planned completion date when the investment was or will be certified and accredited (C&A). If certification and accreditation is not required for this investment because it does not contain any IT systems, enter "N/A".
Date: _____

Enter the completion or planned completion date when the security plan was or will be completed for this investment.
Date: _____

Operational Analysis:

State where are the baseline and the quarterly results of the operational analysis being tracked and documented stored:

Describe the elements of the investment that are reviewed as part of the operational analysis (e.g., cost and schedule, number of milestones tracked, evaluation of performance goals, etc.):

Indicate how often an operational analysis is conducted for this investment:

Provide the date when the operational analysis data was collected for the current quarterly review:

Please insert the correct information for your Program/Staff Office and your investment where applicable:

The *(enter the name of the Program or Staff Office responsible for providing funding for this investment)* hereby certifies that the *(enter the investment name)* investment is funded 100% for steady state operation, and it is achieving at least 90% of its cost, schedule, and performance baseline goals as documented in the Exhibit 300.

Name:_____
Date:_____

DOE Control Review Scoring Criteria

Revision History:

Revision Date	Comments
May 9, 2005	This version supercedes all previous versions

Purpose:

This document defines the proposed scoring criteria to be used by the Information Technology Council (ITC) when conducting the quarterly Control Reviews for all Major IT investments.

Overview of Control Review Scoring Process:

The Department of Energy Control Review process is designed to collect and evaluate performance for all major IT investments on a quarterly basis. Control Reviews assess an investment's ability to meet the cost, schedule, and performance baseline goals defined in its business case. Investments are also evaluated on the existence of an up-to-date Security plan and their security certification and accreditation status, as well as the certification of the project manager at the level of the investment. The ITC will assess and score investments based on how well they achieved their goals and satisfied both security and project management certification requirements using a set of standardized scoring criteria.

Prior to the ITC review, each Project Manager should use the same scoring criteria to assess the performance of their own investment. If the self-scoring results in a score of YELLOW or RED, the Project Manager will need to develop corrective actions to improve the performance, security or project management certification status of the investment. These corrective actions should be documented in the appropriate section on the Control Review Template.

Scoring each section of the Control Review Template:

To score a Control Review Template, a "stoplight" rating scale will be utilized. Specifically, there are six areas in which investments will be evaluated. These Control areas were selected because they are key criteria for the PMA Scorecard, the DOE E-Government Scorecard, and the development of sound IT business cases. These areas include:

1. Project Manager Certification
2. Cost Variance
3. Schedule Variance
4. Performance Variance
5. Security
6. Earned Value Management

The tables on the following pages provide the thresholds for the criteria. Where an investment falls within these thresholds will determine an investment's score of Red, Yellow, or Green for each of the criteria:

1. Project Management Certification			
Description	**Red**	**Yellow**	**Green**
Assessment of the investment's compliance with the DOE Project Manager Certification requirements. Project Managers for major investments are required to be certified at specific levels based on the level of the investment as determined by the OCIO	Project Manager Certification section was not completed **or** Project Manager has not been identified for the investment **or** Project Manager has been identified, but is not certified at the correct level, and is not currently scheduled to take any certification courses	Project Manager has been identified, and he/she is currently taking the required certification courses.	Project Manager is certified at the level of the investment

2. Cost Variance			
Description	**Red**	**Yellow**	**Green**
Assessment of the investment's cost performance. Cost variance should not be greater than + or -10% for any investment. When an investment's cost variance exceeds this threshold a corrective plan of action should be developed by the project manager, and submitted in the quarterly reviews.	Investment Cost information was not reported for the quarterly review **or** Investment's Cost variance is greater than -10%, and corrective actions are not in place, or the corrective actions are deemed insufficient to correct the variance problems	Investment Cost variance is greater than -10%, but sufficient corrective actions are in place to correct the variance problems	Investment Cost variance is not greater than + or -10%

3. Schedule Variance			
Description	**Red**	**Yellow**	**Green**
Assessment of the investment's schedule performance. The Schedule variance should not be greater than + or -10% for any investment. When an investment's schedule variance exceeds this threshold a corrective plan of action should be developed by the project manager, and submitted in the quarterly reviews.	Investment Schedule information was not reported for the quarterly review **or** Investment's Schedule variance is greater than -10%, and corrective actions are not in place, or the corrective actions are deemed insufficient to correct the variance problems	Investment Schedule variance is greater than -10%, but sufficient corrective actions are in place to correct the variance problems	Investment Schedule variance is not greater than + or -10%

4. Performance Variance			
Description	**Red**	**Yellow**	**Green**
Assessment of the investment's ability to meet its performance goals. The performance variance should not be greater than -10% for any investment. When an investment's performance variance exceeds this threshold a corrective plan of action should be developed by the project manager, and submitted in the quarterly reviews.	Investment Performance information was not reported for the quarterly review **or** Investment is not meeting 90% of its Performance goals, and corrective actions are not in place, or the corrective actions are deemed insufficient to correct the performance issues	Investment is not meeting 90% of its Performance Goals, but sufficient corrective actions are in place to correct the performance issues	Investment is meeting 90% or more of its Performance Goals

5. Security			
Description	**Red**	**Yellow**	**Green**
Assessment of the security performance for the investment. This assessment is to determine if security is monitored and maintained throughout the life of an investment.	The Security section was not completed for the quarterly review **or** Investment has an IT system that has not been certified and accredited, and C&A is not scheduled for completion **or** Investment does not have an up-to-date security plan and the security plan is not scheduled to be updated/completed	Investment is not certified an accredited, but C&A is in the process of being completed and a completion date has been set **or** Investment's security plan is not up-to-date, but it is in the process of being completed and a completion date has been set	Investment has been certified and accredited **and** Investment has an up-to-date security plan **or** Investment is not operational so C&A is not required, but investment has an up-to-date security plan

6. Earned Value Management			
Description	**Red**	**Yellow**	**Green**
Assessment of the Earned Value Management (EVM) system and practices for the investment. This assessment is to determine whether EVM has been implemented for investments that require EVM.	Investment has had neither a successful independent nor self-assessment of the investments ANSI STD 748 EVMS **or** Program is not reporting EVM data monthly into PARS	Investment's EVMS successfully self-assessed by the Program Office and/or prime contractor to ANSI Standard 748 with a copy of the evaluation report provided to the OCIO **and** Investment has OCIO concurrence of the self-assessment evaluation report **and** Investment is reporting EVM data monthly into PARS	Investment's EVMS has been successfully independently reviewed, validated or certified to ANSI Standard 748 by OECM, OCIO or an independent entity **and** a copy of the evaluation report has been provided to the OCIO and received OCIO concurrence of the evaluation report **and** Investment is reporting EVM data monthly into PARS

Scoring the Investment:

Once a score has been assessed for each section of the Control Review Template, an overall score will be generated for the investment. The criteria for generating an overall score are described below:

To receive a **GREEN** score for the overall performance of the investment, the following conditions must apply:

1. All of the following criteria received a green score:
    - Project Management Certification
    - Cost Variance
    - Schedule Variance
    - Performance Variance
    - Security
    - Earned Value Management

To receive a **YELLOW** score for the overall performance of the investment, the following conditions must apply:

1. One or more of the following criteria received a yellow score, and none received a red score:
    - Project Management Certification
    - Cost Variance
    - Schedule Variance
    - Performance Variance
    - Security
    - Earned Value Management

To receive a **RED** Score for the overall performance of the investment, the following conditions must apply:

1. One or more of the following criteria received a red score:
    - Project Management Certification
    - Cost Variance
    - Schedule Variance
    - Performance Variance
    - Security
    - Earned Value Management

Appendix D. DOE IT HIGH RISK INVESTMENT REVIEW & REPORTING PROCESS

Revision History:

Revision Date	Comments
August 10, 2005	Version 1
August 18, 2005	Version 1 - Revised

Purpose of the High Risk Investment Review & Reporting Process

To comply with guidance from a newly released Office of Management and Budget (OMB) Memorandum (M-05-23), the Department of Energy's Office of the CIO (OCIO) has established a quarterly high risk investment review and reporting process. This process will assess the performance of the major IT investments that are designated as high risk by the Agency and OMB. It is designed to ensure that high risk investments are enabled to correct deficiencies and improve project performance. The quarterly high risk investment review and reporting process will also promote more effective oversight to facilitate better project planning. This guidance will set in place a structured process that is designed to provide senior management with accurate performance information that will allow them to make timely decisions regarding high risk investments.

This document is intended to assist Project Managers or responsible parties in completing the high risk investment template for each of their major investments that are designated as high risk by the Agency. A high risk investment template (Appendix A) must be completed each quarter as part of the reporting process.

Overall High Risk Investment Instructions

The reporting requirements have been established as of the fourth quarter of FY 2005 for all high risk investments in the Agency. Federal guidance, including OMB Circular A-11, identifies high risk projects as those investments that require special attention from oversight authorities and senior levels of agency management. DOE has worked with OMB to identify the Agency's high risk investments, which include:

- Department of Energy Homeland Security Presidential Directive 12 (HSPD-12) Implementation
- Integrated Cyber Security Initiative (ICSI)
- NNSA Advanced Simulation and Computing (ASC) Future Platform
- Integrated Management Navigation (I-MANAGE) System
- EE State Grants Administration
- SO DOE Integrated Security System (eDISS+)
- Financial Management Line of Business (FM LOB) Inter-Agency Project

OMB guidance suggests that an investment should be designated as high risk when it meets the following criteria:

- The Agency has not consistently demonstrated the ability to manage complex projects;
- The project has exceptionally high development, operating, or maintenance costs, either in absolute terms or as a percentage of the Agency's total IT portfolio;
- The project is correcting recognized deficiencies in the adequate performance of an essential mission program or function of the agency, a component of the agency, or another organization; or
- A delay or failure of a particular project would introduce an unacceptable or inadequate performance or failure of an essential mission function of the agency, a component of the agency, or another organization.[4]
- The investment is an E-Gov or a LoB initiative managed by the agency.

[4] *Office of Management and Budget. Memorandum M-05-23. August 4, 2005.*

- All investments associated with migrations to an E-Gov or LoB initiative are also considered high risk until migration is completed or OMB has determined it is no longer applicably designated as high risk.[5]

Based on this information, DOE applied a set of criteria against its portfolio of major IT investments to determine if any should be identified as high risk. The criteria or factors considered are detailed below.

OMB's High Risk Criteria	DOE's Application of Criteria
▪ Agency has not consistently demonstrated the ability to manage complex projects	▪ There are no examples where the Department has failed to demonstrate the ability to manage complex investments.
▪ Exceptionally high development, operating, or maintenance costs, either in absolute terms or as a percentage of the agency's total IT portfolio	▪ DOE conducted an analysis of its major IT investments requesting DME funding to determine a threshold for "exceptionally" high development and O&M costs. The DME funding for each major IT investment was divided by the total FY 2006 and FY 2007 DME funding portfolio for all major investments. If the ratio exceeded 10%, it was considered to be "exceptionally" high. ▪ The total FY 2006 and FY 2007 funding amounts (DME & O&M) were also analyzed for each investment. The three investments requesting the largest amount of total funding for FY 2006 and FY 2007 were also included on the list.
▪ Being undertaken to correct recognized deficiencies in the adequate performance of an essential mission program of function of the agency, a component of the agency, or another organization	▪ DOE reviewed internal performance scorecards to determine if performance deficiencies existed within mission critical business functions. DOE did not receive a passing score in the FISMA Scorecard. Recognizing the important function of security within DOE's business operations, DOE has included security-related investments on the high-risk list.
▪ Delay or failure would introduce for the first time unacceptable or inadequate performance or failure of an essential mission function of the agency, a component of the agency, or another organization	▪ When interpreting this criterion, DOE evaluated its major investments to determine which investments were supporting essential business functions. The project managers for the investments were then contacted to determine whether up-to-date contingency plans were in place.
▪ The investment is an E-Gov or a LoB initiative managed by the agency.	▪ DOE reviewed its major investments for E-Gov and LoB initiatives.
▪ All investments associated with migrations to an E-Gov or LoB initiative are also considered high risk until migration is completed or OMB has determined it is no longer applicably designated as high risk.	▪ DOE interpreted this criterion to apply to major IT investments targeted for migration to E-Gov and/or LoB initiatives.

Investment Evaluation:
This process will require owners to provide documentation on a quarterly basis. Owners must report on whether the following four criteria are being met, including:

1. Baseline with Clear Goals
2. Cost and Schedule Variance within 10%
3. Qualified Project Manager
4. Avoiding Duplication

For each of the criteria that are not met, the project must document the specific performance shortfall, the cause of the shortfall, corrective action measures with associated dates, and the amount and source of funding (if required).

[5] *Per additional OMB Guidance via email. August 24, 2005.*

Period of Assessment:
The high risk investment review and reporting process is designed to assess the performance of high risk investments on a quarterly basis. Program Offices are required to submit the most current data available for their investments.

High Risk Investment Submission Process

1) Initial Data Call:
The quarterly High Risk Investment process is initiated by a data call that is sent out to Program Offices with High Risk Investments by the Office of the CIO. The data call will contain a guidance document, as well as the High Risk Investment Template. These documents will be used by the Program Offices when submitting quarterly data to OMB for their high risk investments, as designated by the OCIO.

2) Completing the High Risk Investment Template:
To capture performance information for all high risk investments, a High Risk Investment Template has been developed. This template is designed to capture the most current information for the investment. It is the responsibility of the Program Offices to complete the template for each of their high risk IT investments. Once the template is complete, it will need to be submitted to the OCIO.

Program Offices will be sent the template via email. High Risk Investment templates and guidance will also be posted in eCPIC's Resource Library/High Risk Investment Folder.

> ***Once the templates have been completed, the Senior Federal IT Lead should send an email with the attached template to Theanne Gordon (cc: eCPIC) in the Office of IT Reform informing her of the submission.***

3) Analyzing the High Risk Investment Templates:
After Program Offices submit the High Risk Investment Template, it is the responsibility of the OCIO to perform an analysis on these investments. The OCIO will review the templates and Program Offices will be contacted if there are any inadequacies in the documentation or if revisions are necessary. The documentation will also be reviewed during the quarterly Control Review meetings.

4) Submitting the High Risk Investment Templates:
After Program Offices submit the High Risk Investment Template and/or after revisions are made to the documentation, the OCIO will forward the High Risk Investment Templates to OMB, as required.

The Department of Energy High Risk Investment Template

Completing the High Risk Investment Template

Template for Documenting and Reporting Performance of High Risk Projects	
Agency Name:	
As of Date:	
Fiscal Year Quarter:	
Prepared by:	
Telephone Number:	
Email Address:	

Investment Name	Are the Principal Criteria Being met? (Indicate Y/N for each criterion)				For each of the Principal Criteria not being met, Identify and Describe the following:					
	Baseline with Clear Goals	Cost and Schedule Variance within 10%	Qualified Project Manager	Avoiding Duplication	Specific Performance Shortfall	Cause of the Shortfall	Necessary Corrective Actions		Funding from Existing Agency Resources	
							Action	Date (mm/dd/yy)	Amount ($)	Funding Source

Appendix E: Post Implementation Review Evaluation Criteria

Question	Evaluation Criteria	Scoring Criteria
1. Is there a documented 'lessons learned' process that has been incorporated to improve investment performance?	Best practices/lessons learned	0 – A lessons learned process is neither documented nor implemented and there is no clear evidence that actual lessons learned have been incorporated to improve investment performance.
		2 – A lessons learned process has been documented but there is little or no evidence that the process is implemented, or it is clearly evident that lessons learned have been considered and incorporated to improve investment performance but the protocol for incorporating lessons learned has not yet been documented or formalized.
		4 – A lessons learned process is documented the investment clearly demonstrates how lessons learned have been incorporated to improve investment performance.
2. Does the process require that detailed baselines be developed, including descriptions of the milestones, dates, and timeframes?	Best practices/lessons learned; Cost & schedule	0 - The baseline is non-existent/non-attainable or is poorly documented to the extent that it provides little or no value to the management of the investment or tracking investment progress.
		2 - The documented baseline lacks detail but illustrates that some investment planning has occurred. The baseline will provide some limited value in the management of the investment and tracking investment progress.
		4 - The baseline is well developed with clear descriptive milestones and viable planned costs and schedule.
3. Does the investment conduct assessments of customer satisfaction (end-users, business or program unit sponsor, etc.)? What are the results of the Customer Satisfaction assessment?	Best practices/lessons learned; Technical & operational performance	0– Customer satisfaction has not been assessed or customer satisfaction rating is less than 50%.
		2 – Assessments of some customer groups have been done and/or the customer satisfaction rating is less than 80%.
		4 – Assessments include input from all customer groups and the customer satisfaction rating is greater than 80%.
4. Does the investment include an assessment of compliance with DOE's Enterprise Architecture?	Enterprise Architecture compliance	0 -The investment does not align with the DOE Enterprise Architecture and/or alignment is not adequately or clearly documented
		2 The investment remotely aligns to the DOE Enterprise Architecture and/or the documented alignment needs improvement
		4 - The investment clearly aligns with the DOE Enterprise Architecture, which is adequately documented.
5. Does the investment have and actively use an Integrated Project Team?	Best practices/lessons learned	0 – Investment does not have an IPT.
		2 – Investment utilizes an IPT, but not to the extent it should. Roles and responsibilities are loosely defined or are not documented at all.
		4 – Investment has and fully utilizes its IPT. Roles and responsibilities are clearly defined and each IPT member is aware of and performs his or her duties as expected.

Question	Evaluation Criteria	Scoring Criteria
6. Is the investment collecting projected versus actual cost, benefit, and risk data?	Technical & operational performance; Cost & schedule; Risk Management	0 - Actual data is not regularly collected and no analyses have been conducted to determine investment progress against the baseline/projected data.
		2 - Some actual data is collected, but collection is inconsistent and/or there are gaps in the actual data.
		4 - Actual cost, benefit, and risk data is documented and tracked against projected data.
7. Has the cost, benefit, and risk information that was used for initial investment justification been preserved? Have updates that have been made to costs, benefits, or risks been noted and preserved?	Technical & operational performance; Cost & schedule; Risk Management	0 - Little or no original investment justification data is available.
		2 - Original investment data are only partially available and/or changes to the data are poorly documented.
		4 - All original investment data used for initial justification has been maintained and was readily available. Any changes to the original data has been noted and preserved.
8. Is Cost and Schedule Variance data available for the investment?	Technical & operational performance; Cost & schedule	0 - No CV and/or SV data available, the investment was implemented with a schedule variance greater than +/- 20%, or the investment was implemented with a cost variance greater than +/- 10%
		2 - Limited CV and/or SV data available, the investment schedule variance at implementation was between +/- 10% and +/-20%, or the investment cost variance at implementation was between +/-7% and +/-10%
		4 - Comprehensive CV and SV data available, the investment was implemented with a schedule variance less than +/-10%, and the investment was implemented with a cost variance less than +/-7%
9. Have investment benefits that were obtained been quantified? If not, are qualitative measures being used to determine impact?	Technical & operational performance	0 - Few or no quantifiable or qualitative measures have been documented.
		2 - Benefits have only been partially quantified and/or qualitative measures need some improvement to adequately determine the impact of the investment.
		4 - Investment benefits have been quantified and/or qualitative measures are being adequately used to determine the impact of the investment.
10. Was an economic analysis conducted? If yes, provide your analysis results - NPV, Payback Period, and ROI. If not, state why not?	Cost & schedule	0 - An economic analysis was not conducted, calculations were conducted but are clearly flawed, and/or the investment data that is needed to perform calculations was not readily available
		2 - Some calculations were conducted, calculations were conducted but assumptions were not well documented, or adequate investment data was documented and available that allowed reviewers to easily make the necessary calculations
		4 - A thorough economic analysis was conducted and assumptions documented; Net Present Value, investment payback period, and Return on Investment were calculated and readily available

Question	Evaluation Criteria	Scoring Criteria
11. Is security funding identified for the investment as well as specific security related activities that the funding will be used for?	Cost & schedule; Security; Risk Management	0 – No funding has been identified specifically for security and/or discrete tasks that the funding will be used for have not been identified.
		2 – Security funding and activities have been identified, but level of effort does not align with the funding amount and/or the tasks specified are not identifiable in the overall investment plan.
		4 – Both funding and related activities have been identified and there is clear alignment between the two. The security related activities are also integrated and overtly present throughout the overall investment plan/schedule.
12. Does the investment identify security-related risks, and protect privacy data?	Security; Risk Management	0 - Security risks and/or mitigation strategies are poorly or not documented at all and/or privacy data is not adequately protected in accordance with the Privacy Act.
		2 - Security risks and/or mitigation strategies are only partially documented. Privacy data is adequately protected.
		4 - Security related risks are clearly documented in a Risk Assessment. Mitigation strategies are provided in an up-to-date system security plan that was written in accordance with NIST guidelines. Privacy data is protected in accordance with the Privacy Act.
13. Has the investment been certified and accredited?	Security	0- The investment does not have a completed C&A or no information was provided
		2- The C&A is in progress and a completion date/methodology has been provided
		4- The investment has a completed C&A
13. Does the investment assess and monitor contractor performance, and maintain oversight data?	Best practices/lessons learned; Technical & operational performance	0 - Contractor performance is not regularly assessed and/or the results of assessments are not documented, maintained, or reviewed as part of subsequent assessments.
		2 – Contractor performance is assessed, but a formal assessment process has not been documented or implemented. Assessment results are documented and maintained, but no actions are taken to improve performance deficiencies.
		4 – A regular assessment process is documented and has been implemented. Results are documented, maintained, and periodically reviewed with the contractor to help ensure that performance deficiencies are corrected in a timely manner.
15. Does the investment support GPEA?	Best practices/lessons learned; Strategic goals and objectives	0 – This investment does not support GPEA
		2 – Investment indicates that it supports automating paper-based transactions but is not included in DOE GPEA Compliance Plan
		4 – The investment supports electronic transactions/record-keeping currently identified in DOE's GPEA Compliance Plan AND describes how the investment relates to the plan.

Question	Evaluation Criteria	Scoring Criteria
16. Has the investment achieved its performance goals (intended impact), and whether this impact is still aligned with mission goals?	Technical & operational performance	0 - Few or no performance goals have been met and there is little or no alignment between the performance goals and DOE's mission goals.
		2 - The investment has met some of its performance goals and/or has poor documentation of the goals being met; Performance goals have been met, but do not closely align with DOE mission goals.
		4 - Yes the investment has adequate documentation that illustrates that all of its performance goals have been achieved and that those goals align with DOE's mission goals.
17. Are the investment's original business assumptions that were used to justify the investment still valid?	Strategic goals and objectives	0 – Business assumptions have not been documented, are not readily available, or are invalid and/or the investment does not illustrate clear alignment with one or more of DOE's business processes
		2 – Some assumptions are still valid and the investment demonstrates how it fulfills a DOE business need or directly supports a DOE business process
		4 – Investment's original business assumptions are clearly documented and remain valid, and the investment clearly aligns with one or more DOE business process/fulfills a DOE business need
18. Were corrective actions for investments not meeting performance goals, outlined by the investment management team? Were timetables and steps for implementing these corrective actions established as part of the decision?	Best practices/lessons learned; Technical & operational performance; Cost & schedule	0 – Corrective actions were not documented.
		2 – Corrective actions were considered, but the course of action was not documented.
		4 – Corrective actions were considered and documented, including a timetable for completing those actions.
19. Does the investment directly support DOE's mission, and strategic goals and objectives?	Strategic goals and objectives	0– Investment does not state that it supports any of DOE's strategic goals/objectives.
		2 – Investment directly supports at least one of DOE's strategic objectives, but does not describe clearly how results or impacts will contribute to strategic goals or objectives.
		4 – Investment directly supports at least one of DOE's strategic objectives, and clearly describes how results or impact will contribute to DOE's strategic goals or objectives.
20. Does the investment support one or more of DOE's business processes?	Enterprise Architecture compliance; Impact on stakeholders	0 – Investment does not support any business process.
		2 – Investment members were able to demonstrate alignment during the PIR, but it is not documented.
		4 – Investment is aligned with at least one DOE business process, and has supporting documentation.

Question	Evaluation Criteria	Scoring Criteria
21. Does the investment regularly evaluate and document the 'current status of the investment'? (Assess the investment's impact on mission performance, and determine future prospects/changes for the investment.)	Best practices/lessons learned; Technical & operational performance; Cost & schedule; Impact on stakeholders	0 – Investment does not provide any status report data.
		2 – Investment regularly evaluates and monitors investment status but is not documented
		4 – Investment regularly evaluates and monitors investment status, and has supporting documentation.
22. Have Records Disposition Schedules been approved for the information in this investment	Records Management	0- SF-115 not submitted
		2- SF-115 submitted, but not approved
		4 – SF-115 has been approved
23. Data backup processes are adequate for the significance of the information	Records Management	0 - Backups are not conducted daily when data entry has occurred. No restoration test
		2- Only daily backups have been conducted,
		4 - Daily and Weekly backups are routinely performed and backup test has been completed within 1 year.
24. Data is protected to prevent unauthorized alterations and documents a record of changes to the data (date, who, what).	Records Management	0 - Data is on LAN without protection
		2 - Data is maintained on a stand alone server or system that is protected adequately.
		4 - Data is maintained on LAN with password protection.
25. Is the investment linked to an electronic records management system (ERMS) that imposes automatic dispositioning and meets DOE-STD-4001-2000	Records Management	0 - No link to an ERMS has been made.
		2 - A link to an ERMS has been made, however the Retention portion has not been connected or backups have not been made to it.
		4 - EIS is linked to an ERMS and periodic records managements backups are performed per the Schedule
26. Will an E-Gov initiative replace this investment?	Enterprise Architecture Compliance; Impact on Stakeholders	0 – No information is provided or an assessment has not been performed
		2 – This investment will be replaced by an E-Gov initiative, however a transition plan is not in place
		4 – This investment does not duplicate an E-Gov initiative or it will be replaced by an E-Gov initiative and a transition plan is in place.

Appendix F. PROGRAM–LEVEL IT INVESTMENT MANAGEMENT MODELS

To institutionalize and implement requirements of the Clinger/Cohen Act, specific Programs have defined and documented a process to ensure that IT projects are well-planned and well-managed. In 1995, the Office of Civilian Radioactive Waste Management (RW) Information Management (IM) organization was restructured to better support a Corporate approach for doing IM business enterprise-wide. In 1997, the Office of Science (SC) initiated a Strategic Information Planning effort to address long-term data, information system, and technology needs. The IT planning and investment models described below illustrate how larger Programs have formalized and adapted key elements in their IT Capital Planning activities to accommodate the unique structure and mission of the Programs. A smaller Program model by the Office of Hearings and Appeals (HG) with a minimum layer organization structure illustrates how the Program has adapted an informal process for IT Capital Planning and Investment management.

Office of Civilian Radioactive Waste Management

The Office of Civilian Radioactive Waste Management established the Information Management Council to review, coordinate, and integrate RW information resources from a corporate perspective. The IM Council structure ensures that RW information resources are implemented and managed in an efficient and effective manner and guides and controls the evolution of the RW Information Architecture Baseline.

The first major initiative emerging from the RW IM Council was the establishment of an integrated IM Planning Team tasked with establishing an IM Planning Framework. The IM Planning Framework included a Program-wide IM Planning process and the development of Strategic and Multi-Year IM Program Plans, as well as Annual Planning Guidance in support of work plan development. The FY 1998 Annual Planning Guidance identified Management and Administration Actions, which included implementation of an RW IT Capital Planning process. To implement the RW IT Capital Planning and Investment Management process, four decision-making bodies have been instituted under the IM Management structure.

- **Information Management Steering Committee (Senior Management Board)** - The Board is a senior-level forum for identifying Program information needs and acting as a link between IM activities and the Program.
- **IM Council (IM Managers)** - The Council is an IM enterprise-wide policy, planning, and decision-making body.
- **Architecture Working Group (AWG) [Sub-Committee of the IM Council]** - The Working Group addresses technical IM issues and manages the Information Architecture baseline.
- **Records Management Working Group (RWG) [Sub-Committee of the IM Council]** - The Working Group addresses issues related to the establishment, implementation, and maintenance of records management policies and requirements.

The RW Program Management & Operating (M&O) contractor has established an Information Technology Steering Committee (ITSC) to identify, rank, and approve IT initiatives. Additionally, the M&O issued a *Capital Planning Business Process Model Report* that describes the current M&O Capital Planning processes, functional requirements, and a model for future Capital Planning processes.

The Information Management Steering Committee sponsored an analysis of RW current IT Investment decision-making practices, *Draft IT Investment Management Baseline and*

Recommendations Report. The report assisted the Program in identifying new requirements (under the Clinger/Cohen Act of 1996) and ensuring implementation of the IT Investment Management process that is in full compliance with the Act and appropriate for the Program. The analysis addressed the Program's IT select, control, and evaluate practices as compared to the IT Investment Management approaches recommended by the GAO and Federal Government practices.

Major elements of the Program's current enterprise-wide IM planning process during a fiscal year include the following:

- **February** - RW IM Managers and Contractor Support Staff meet to conduct IM strategic planning and five-year IT operational planning.
- **March/April** - RW issues an updated *Information Management Strategic Plan.*
- **June** - RW issues the *Information Management Multi-Year Program Plan*, which describes the work scope, summary-level funding estimates, and the major actions and milestones required over a five-year period to support Program objectives defined in the *OCRWM Program Plan* and IM strategic goals described in the *IM Strategic Plan*.
- **July** - RW IM Managers and Contractor Support Staff meet to refine actions identified in the *IM Multi-Year Program Plan* for the coming fiscal year based on additional budget and Program-level planning information.
- **July/August** - The Program issues the *Information Management Annual Planning Guidance* document to provide guidance to contractors in the development of the coming fiscal year work plans.

The *Draft IT Investment Management Baseline and Recommendations Report* further reported select process activities as follows:

> *The process was first implemented in 1995 to ensure that enterprise-wide IM strategic and operational planning support Program priorities, missions, and objectives. In FY 1998, RW augmented its standard IM planning process to include a Call for IT Initiative Information (ITII). The ITII requires IM managers to make the business case for IT initiatives, conduct risk analyses, identify expected outcomes, and prioritize competing IT requirements consistent with Clinger/Cohen Act requirements. The ITII was considered a preliminary step to comply with the Act.*

The M&O contractor also develops a Short Range Plan (SRP) based on input from functional users that identifies the IT procurements for the coming fiscal year. Initiatives not identified in the SRP must obtain an out-of-cycle approval by the M&O IM Manager before the Procurement Office releases funds for the initiative.

To support IT investment decision-making, the M&O established an Information Technology Steering Committee (ITSC) that serves as a communications link between the IT community and functional-level users. Membership on the ITSC was originally intended to be M&O Operations Managers, but had been delegated to their representatives. The ITSC ranks and approves initiatives identified during the development of SRPs.

The M&O also issued a *Capital Planning Business Process Model Report* that describes current M&O capital planning processes, functional requirements, and a model for future capital planning processes. The *Report* identifies a high-level model for implementing an IT capital planning process consistent with the Clinger/Cohen Act. The model represents preliminary thinking on

future IT capital planning efforts. The M&O is developing an internal procedure for compliance with the Clinger/Cohen Act.

Current control processes are based on basic project management practices as they relate to specific systems or initiatives; for example, through systems development life cycle documentation and project plans. No formal process is in place to document major IT investment decisions (except through the budget process). Other actions and decisions may be documented through informal communications, such as e-mail messages. RW does not have standardized evaluation procedures. Informal methods are used to assess a project's impact on mission performance and to determine future actions.

Office of Science

The Strategic Information Planning (SIP) project , sponsored by the Office of Science Executive Steering Committee (ESC) and championed at the executive management level, produced an SC *Information Management Strategic Plan*. The SC *Information Management Strategic Plan* is a five-year plan that describes the business functions, data, applications, and technology information upon which all IM support for SC business activities is based. The *IM Strategic Plan* utilizes the Enterprise Architecture Planning methodology for its IT Capital Planning and Investment Management process and comprises six key components.

- **Principles** – Fundamental rules (architectural principles) used by SC for making decisions.
- **Business Model** – SC business activities. The SC *Information Management Strategic Plan* identified the need to reengineer Information Management processes to support the SC Business Model and defined the IM activities associated with six core SC business functions: representing and promoting SC; setting direction for research; formulating the budget; executing the budget; managing human resources; and managing support services.
- **Information Resources Catalog** – Database of the organization's applications and the technologies and data associated with them. The Information Resources Catalog (IRC) serves as a repository for information about systems developed by SC Information Management, SC Program Office Systems, and DOE Corporate Systems that SC may be required to use or may find useful. IRC allows SC to know about its system assets and to understand the impacts as new technologies and systems are rolled out.
- **Technology Infrastructure** – Technology Infrastructure needed to support the SC business activities. The Technology Architecture plans the necessary hardware, software, and connectivity infrastructure to support the architected applications projects. Two main activities of the Technology Architecture process include: Technology Positioning Statements, which summarize the work done by SC researchers and project technologies. SC needs to implement within an approximate time frame to support planned application development specified in its Application Architecture; and a Technology Deployment Plan, which outlines technology projects and functions as a complete map of the changes to be implemented to build the technologies and applications that provide interfaces with the data to fully support SC's user community.

The **Information Management Board (IMB)**, established in December 1997, provides representation on IM issues and directions. The IMB meets monthly and reports to the Executive Steering Committee. Management activities of the IMB include the following:

- Making recommendations on priorities, standards, and changes to IM architectures
- Providing guidance on IM issues
- Approving IM policies and procedures
- Facilitating expanded customer involvement and feedback related to IM issues by
- identifying participants for various customer focus groups

The **Information Management Board** consists of one voting member from each of the ten SC Program Organizations: Offices of the Director, Laboratory Policy High Energy and Nuclear Physics, Biological & Environmental Research, Basic Energy Sciences, Planning and Analysis, Fusion Energy Sciences, Resource Management, Advanced Scientific Computing Research, and Laboratory Operations and Environment, Safety and Health. A member of the Executive Steering Committee chairs the IMB.

The **Executive Steering Committee**, the key decision-making senior management body under the Office of the Director, is comprised of the Directors and Associate Directors of the Program Organizations, and meet monthly. The ESC provides senior management budget and policy approval and oversight on IT initiatives, recommendations, and issues presented by the Information Management Board. The Information Management Board and Executive Steering Committee also meets annually to review projects and resolve outstanding issues on a macro level, usually toward the end of the fiscal year.

The SC *Information Management Strategic Plan* recognizes a decentralized decision-making structure for IT decisions primarily related to the development and implementation of a system and/or the acquisition of hardware and software. Under the decentralized structure, certain IT decisions are made by a centralized IM provider organization (e.g., Administrative and Information Management Division) and other decisions are made by the line of business organizations (e.g., Program Office).

SC Policies and Procedures state that written Performance Measures and Service Level agreements are established and that written evaluations are prepared. Progress reports in establishing the performance measures and the results of evaluations are presented quarterly to the IMB.

Measurements of SC customer satisfaction and technical capability have been implemented in surveys administered to the user community by the Information Management Team. Survey results on pre-implementation and implemented projects provide feedback to management.

Office of Hearings and Appeals

Within the Office of Hearings and Appeals, under the Office of Management Operations and Management Information Division, IT Capital Planning and Investment Management is an informal process. Due to a minimum layer organization structure, currently 42-person staff and approximately $4.2 million appropriated for the HG budget (excluding the Board of Contract Appeals), the select, control and evaluate process is conducted in an informal team approach for Programmatic administrative support systems.

The Management Information Division's informal Select process for *non-major projects* is characterized by the following activities.

- The system administrator articulates requirements to the information resource manager, who is the Director of Management Information.
- An internal discussion is held between the information resource manager and computer staff on new requirements that have significant Program operational impact.
- A report outlining the options and recommendation is prepared by the initiating computer staff member and provided to the information resource manager for approval.

The responsibility and accountability for IT Capital Planning is delegated to the HG Director of Management Information. For *major IT Capital Planning projects*, an Issue Paper format approach is the selected venue for presentation of information on technology issues to the HG senior management staff.

Two significant projects undertaken within the past few years consisted of the below activities under the select process.

- **Issue Paper** (documented project justification) on the Proposed Project is developed that outlines the Issue, Proposal, Background, Pros, Cons, Special Considerations, and Recommendations. The Issue Paper also outlines the Costs and/or Cost Savings.
- **Benefits Paper** on the proposed project is developed.
- **HG Deputy Directors** participate in the review and decision-making on major Capital Planning projects with the HG Director and the Information Resource Manager.

For the control process, standard project management processes are utilized to control milestones and accomplishments.